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FINAL SUBMITTAL

ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP)

LIMITED ENERGY STUDY

WATERVLIET ARSENAL

WATERVLIET, NEW YORK

VOLUME IIIa

SITE SURVEY FORMS--ANCILLARY FACILITIES

CONTRACT NO. DACA65-91-C-0072

PREPARED FOR:

**U.S. ARMY CORPS OF ENGINEERS
NORFOLK, VIRGINIA**

PREPARED BY:

**ENERGY AND ENVIRONMENTAL SERVICES DEPARTMENT
REYNOLDS, SMITH AND HILLS, INC.
P.O. BOX 4850
JACKSONVILLE, FLORIDA 32201**

RS&H PROJECT NO. 2900379002

APRIL 1992



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DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
P.O. BOX 9005
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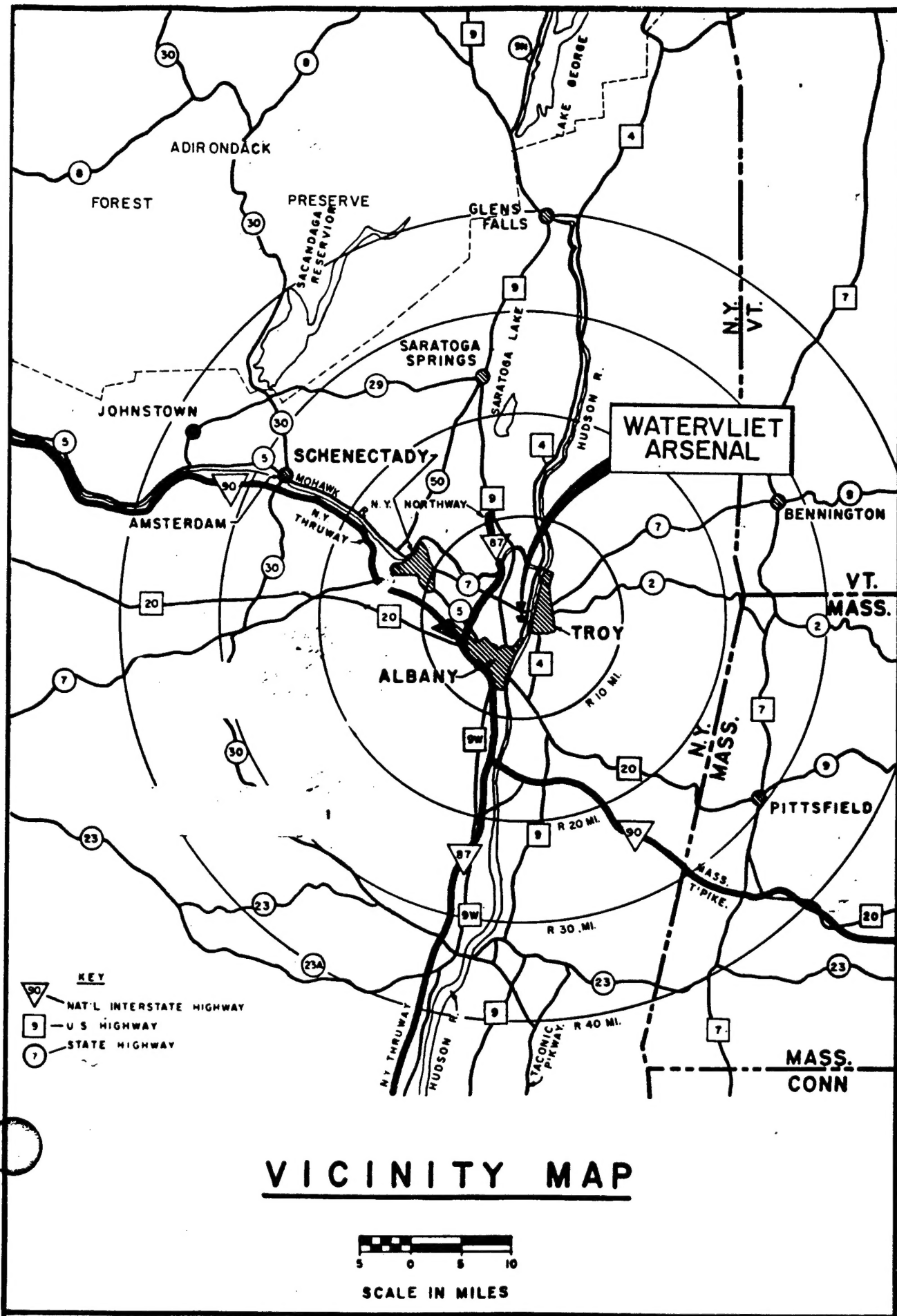
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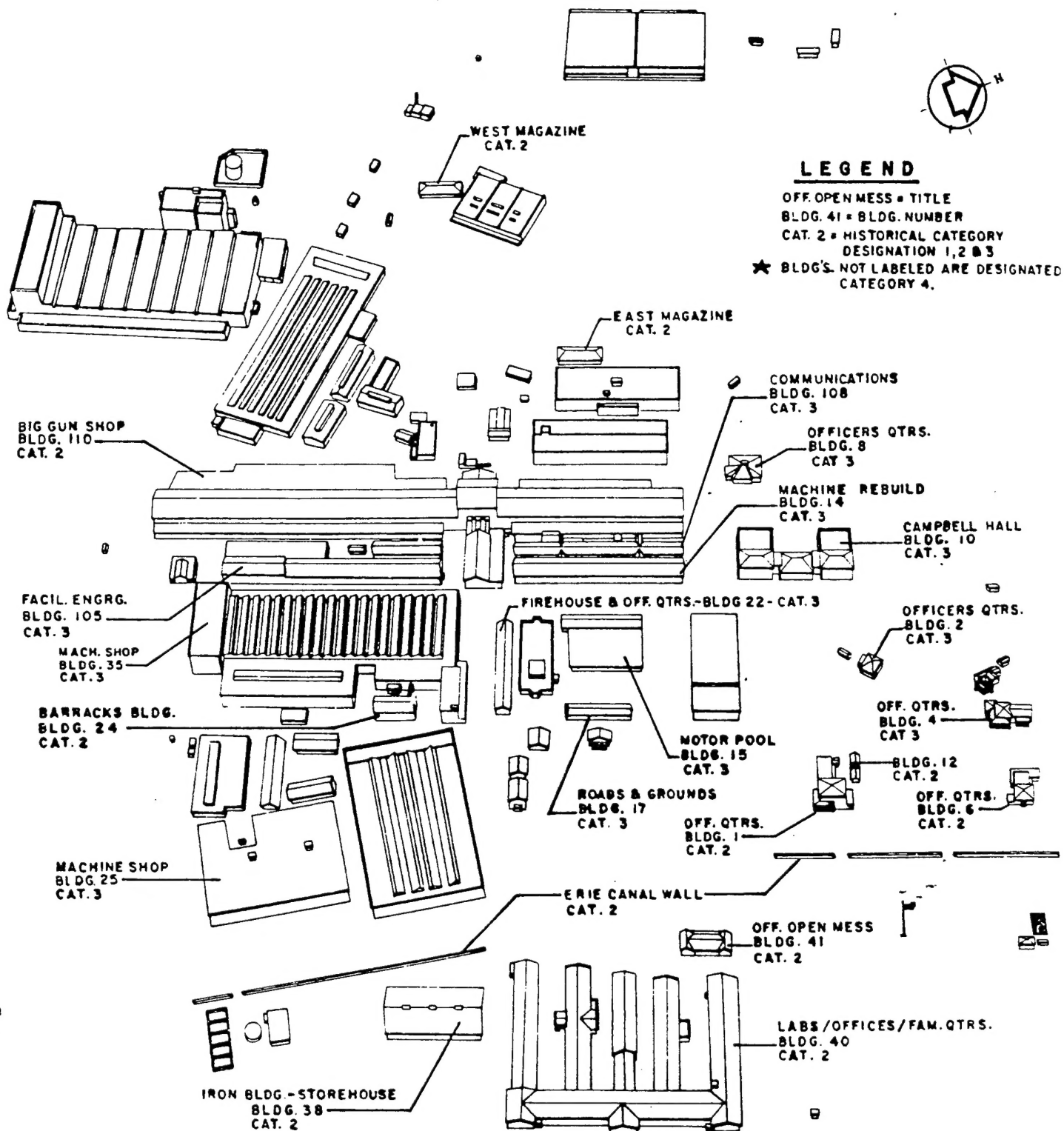
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Marie Wakefield,
Librarian Engineering

VOLUME III-a
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HISTORICAL BLDGS. LOCATION MAP

BUILDINGS TO BE AUDITED AND GENERAL ECOS

BASIC INDUSTRIAL FACILITIES

OPTION 1 - ANCILLARY FACILITIES

Number	Number	Description
1	10	Campbell Hall
2	15	Garage (Motor Pool)
3	20	Major Component Building
4	21	O'Keefe Hall
5	22	Fire Station
6	23	Operations Office
7	24	Operations Office
8	25	Minor Comp. Bldg. & Op. Offices
9	38	Storehouse and Museum
10	40	Benet Labs & Others
11	44	Dalliba Hall/Product Assurance
12	110	(Remainder) Heavy Caliber Tube Bldg.
13	115	Maggs Research Center
14	120	Facilities Offices and Shops
15	130	Storehouse/Processing Building
16	136	Boiler Plant
17	145	Warehouse & Property Disposal

GENERAL ECOS

- a. Steam distribution and condensate return systems
- b. Building ventilation and exhaust systems
- c. Radiant heating
- d. Space heating controls
- e. Energy-efficient lighting
- f. Energy-efficient ballasts
- g. Lighting controls
(Including occupancy sensors, photocells, separate switching)
- h. Fluorescent fixture reflectors

BUILDING ENERGY MONITORS
REVISED LIST

<u>BLDG/AREA</u>	<u>WARDEN</u>	<u>EXTENSION</u>	<u>RESPONSIBLE DIRECTORATE</u>
10 (1st flr)	Barbara Carpenter	4258	Resource Management (RM)
10 (2nd, 3rd flr)	Walter Libudziwski	4778	Procurement (PPI-P)
15	Art Tonjes	5858	Logistics (LDT)
20	Ron Berben - 1st shift	5547	Operations (ODM-H)
	Edward Facticeau - 2nd shift	5655	Operations (ODM-H)
	John Adamo - 3rd shift	5655	Operations (ODM-H)
21	Ed Van Kampen	5473	Community Activities (PCC)
22	Don Strait	5990	Engineering & Housing (EHF)
24	Don Marcello	5313	Operations (OD)
25 (3rd flr)	Timpy Uppal	5257	Operations (ODP-IO)
25 (2nd flr)	Ted Pollak - 1st shift	5994	Operations (ODM-M)
25 (1st flr)	Steve Albright - 1st shift	5489	Operations (ODM-M)
25 (1st flr)	Rich Trembley - 2nd shift	5489	Operations (ODM-M)
25 (1st flr)	Jerry Gavin - 3rd shift	5775	Operations (ODM-M)
35 Bay A	Robert Rawls	5145	Operations (ODM-C)
Bays B-D	Michael Caulfield - 1st shift	5840	Operations (ODM-C)
	Robert Michaels - 2nd shift	5265	Operations (ODM-C)
	Bart Bisgrove - 3rd shift	5162	Operations (ODM-H)
Bays E-J	Donald Anselment - 1st shift	5089	Operations (ODM-H)
	Gregory Temblador - 2nd shift	5089	Operations (ODM-H)
	James Fox - 3rd shift	5089	Operations (ODM-H)
35 East	Charlie Morris - 1st shift	5978	Operations (ODM-F)
	John Bailey - 2nd shift	5179	Operations (ODM-F)
	Charlie O'Brien - 3rd shift	5179	Operations (ODM-F)
40 (1st flr)	Gary Conlon	5543	Benet Laboratory (CCB-S)
40 (2nd flr)	Larry Marten	4701	Benet Laboratory (CCB-D)
44	William O'Hara, Jr.	5742	Product Assurance (QA)
110 Bays A-E, 60-69	Edward Maruszczak	5266	Operations (ODM-C)
Bays D-E, 13-20	Paul Seney	5383	Benet Laboratory (CCB-SE)
All Other Bays	Michael Caulfield	5840	Operations (ODM-C)
115	John Wrzochalski	4970	Benet Laboratory (CCB-R)
120	Jack Collins	5934	Engineering and Housing (EHW)
123	David Malcolm	5389	Operations (ODS-P)
125	Jerry Garipey - 1st shift	5049	Operations (ODM-T)
	Robert Buck, 2nd shift	5084	Operations (ODM-T)
126	Jim Lohaus	5683	Operations (ODS-SW)
135	Robert Abeel - 1st shift	4271	Operations (ODM-C)
	John McElwee - 2nd shift	4271	Operations (ODM-C)
	Bart Bisgro - 3rd shift	5162	Operations (ODM-C)
145	Theresa Milo	4112	Defense Reutilization & Marketing Office (DRMO-XPP)

NOTE: For all other buildings, contact your Directorate Office.

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: _____ Bldg. # 120

DATE: 10/15/91

Notes & Comments:

Lettering

Russ Wells - DCH

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: _____ Bldg. # _____ DATE: 10/18/91

Notes & Comments: _____

Exit Briefing

Major Hally

- Lighting
- Heating
- EMCS - integrate with LAN

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: _____ Bldg. # 108 DATE: 10/17/91

Notes & Comments: J. Garrett

Ethernet System 802.3 - Industry Standard

- Have cable to all buildings
- Factory floor - DECNET
- Admin - TCP/IP

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: P. Hutchins Bldg. # 120 DATE: 10/18/91

Notes & Comments: _____

Dennie Brooks Phil Dorsey x4534

Existing system controls valves - slow on/off

Bldg #10 hot water with setback

#40 "

DHW Steam #25 only one

- No list of water heaters

- List of chillers

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: _____ Bldg. # _____ DATE: _____

Notes & Comments: _____

Don Brooks

10 - a/c and heat

15 -

* Lan System Ethernet Jim Garret
Honeywell has system
Lan system up to - can we add on
to control energy with this

2100 Steam traps TrapMan
~12% fail each year

A/C 10, 15, 20, 24, 25, 40, 44, 110 (telephone room)
112, 115, 120

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # ALL DATE: 10-15-91

Notes & Comments: _____

All pressure measurements were taken with:

AirdataTM Multimeter

Electronic Micromanometer

Model No. CFM-86

Manufactured by Shortridge Instruments, Inc.

Owned by Watervliet Arsenal Maintenance

Shortridge Instruments, Inc.

7855 East Redfield Road

Scottsdale, AZ 85260

Phone # 602-991-6744

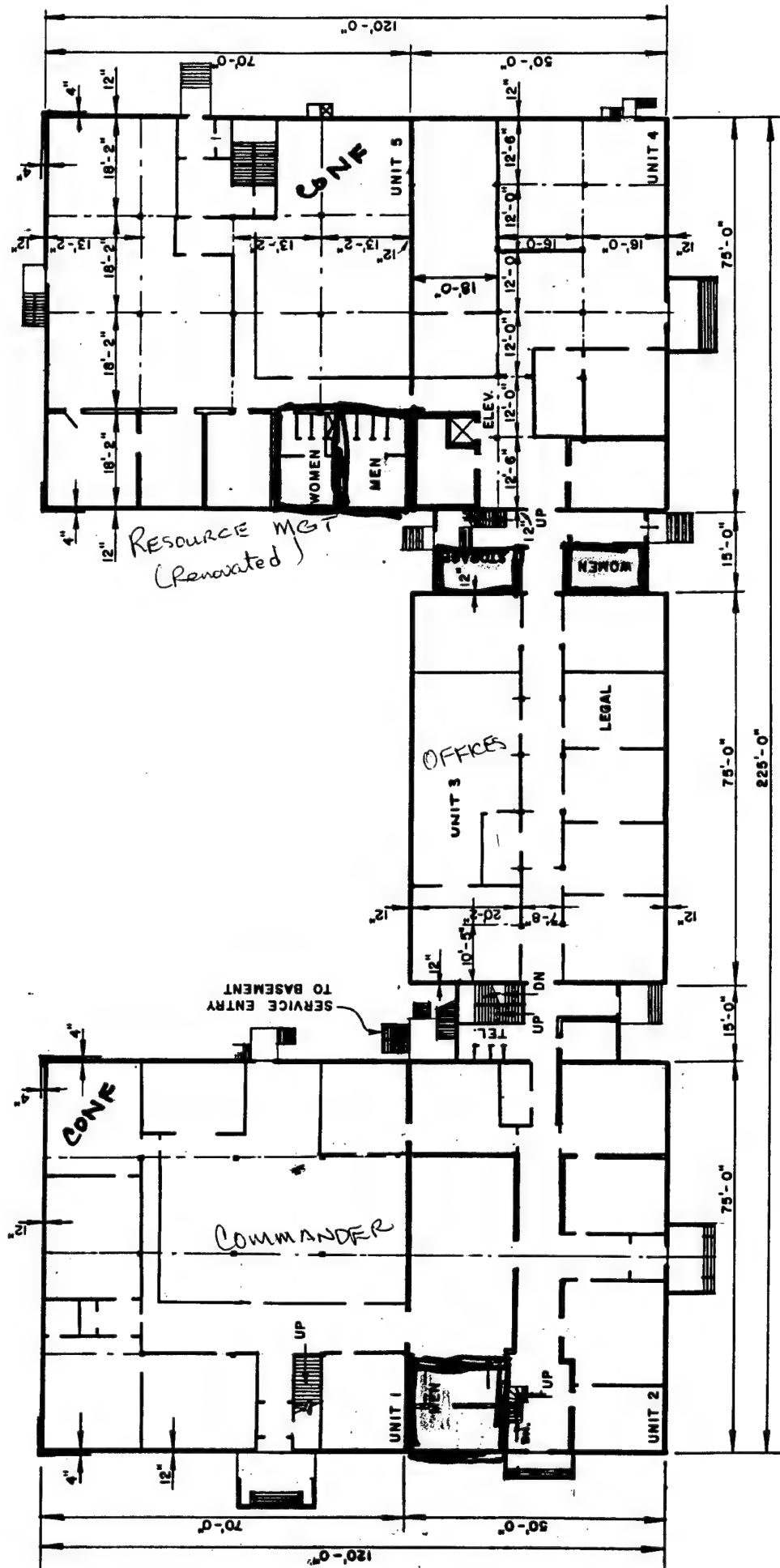
FAX # 602-443-1267

LIGHTING SURVEY
 WATERVLIEI ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
ARSENAL TOTALS (1)				9,377	20,014		1,490,955		6,673,506	

SQ. FT. = 1,002,119
 WATTS/SQ. FT. = 1.5

(1) Includes HIV lamps in Bldg 25

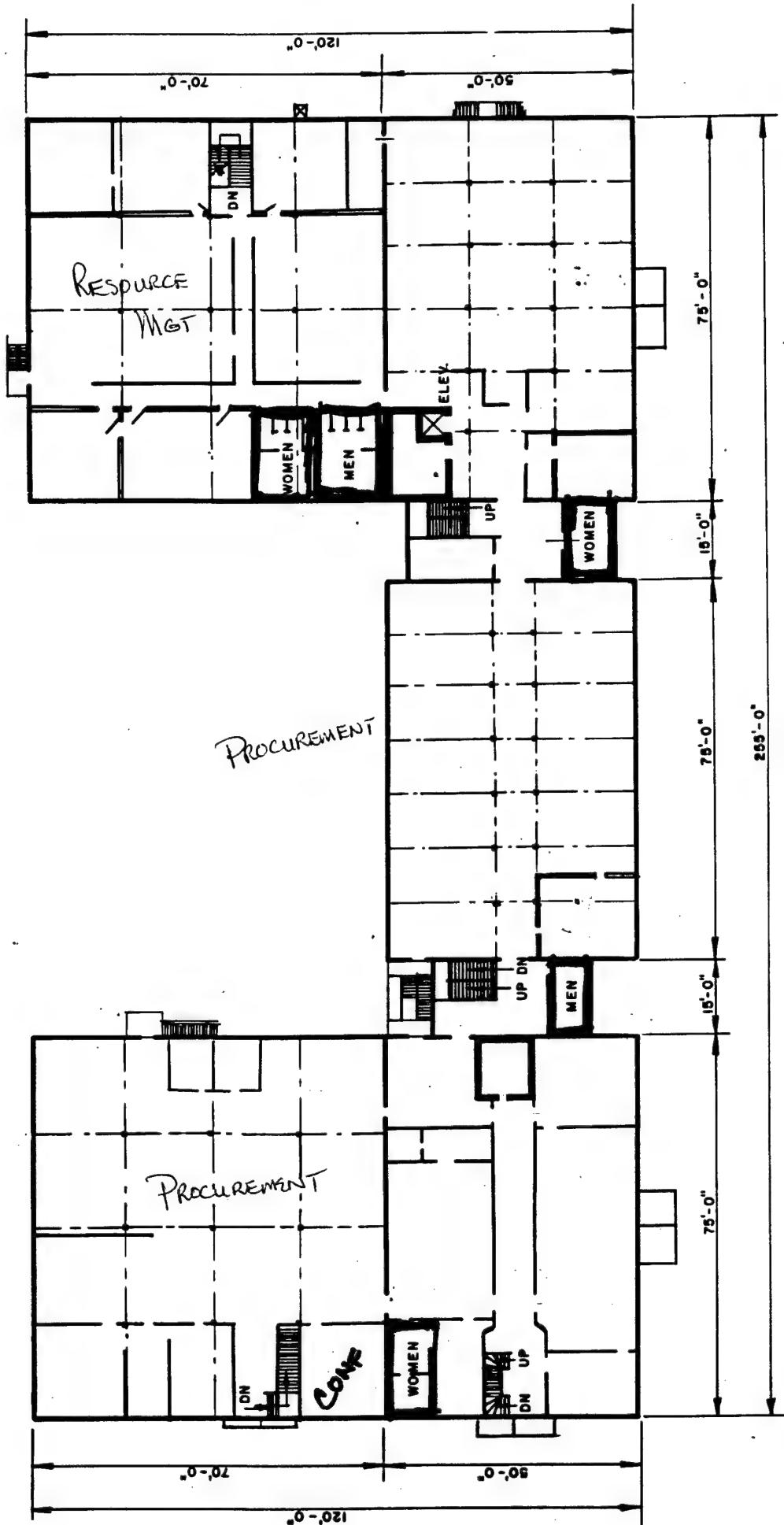


WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGLI, JR.	by: <i>[Signature]</i>
Revisions: <i>2</i>	Date: 4/76
FIRST FLOOR PLAN CAMPBELL HALL BUILDING NO. 10	



NET FLOOR AREA
24,495
Square feet

FLOOR CAPACITY

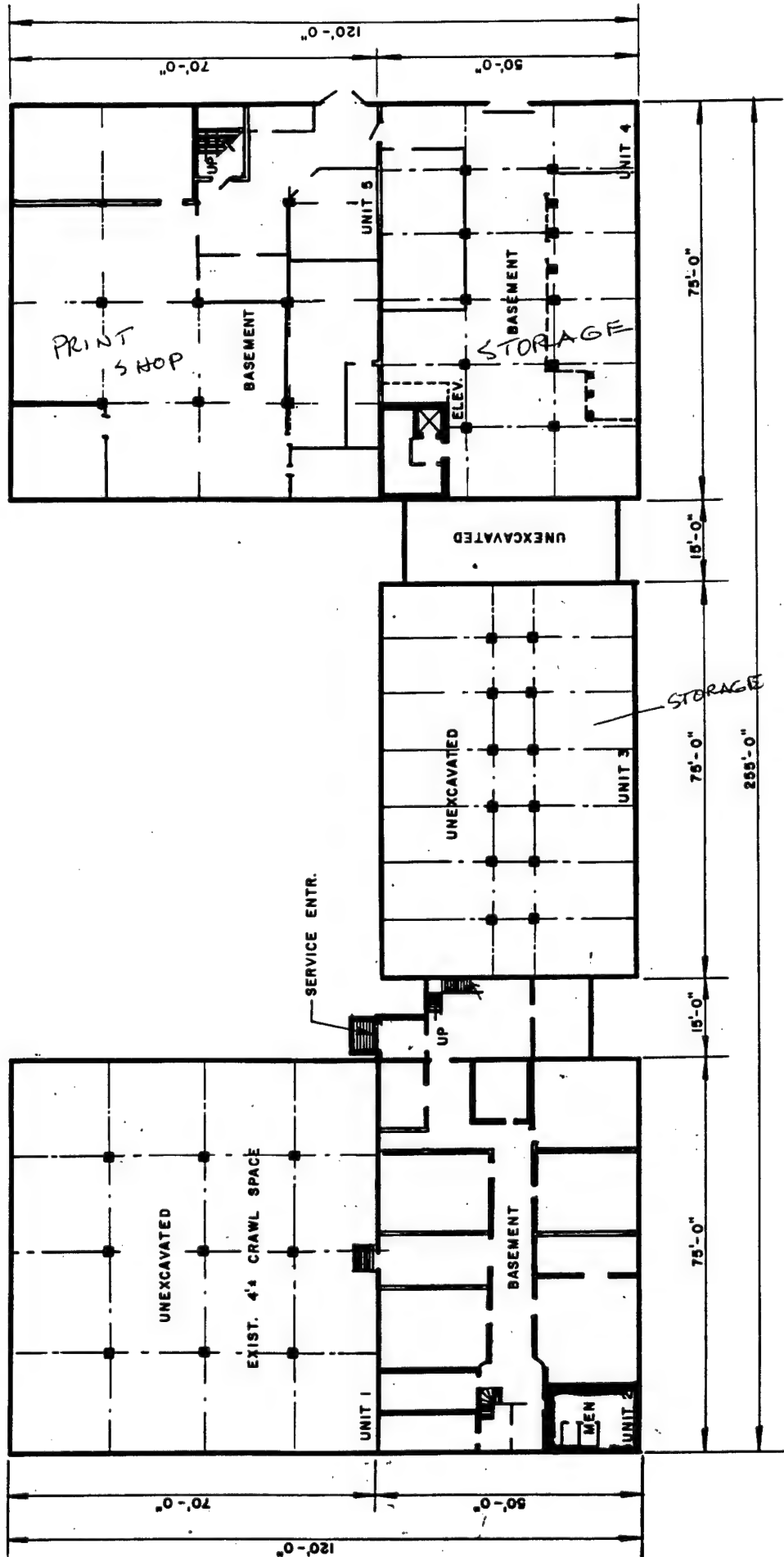


WATERVLLET ARSENAL	
WAT. ET. N.Y.	
Drawn by: J.R. GANEMILL	by: <i>J.R. GANEMILL</i>
Revisions	Date
	4/76
SECOND FLOOR PLAN CAMPBELL HALL BUILDING NO. 10	



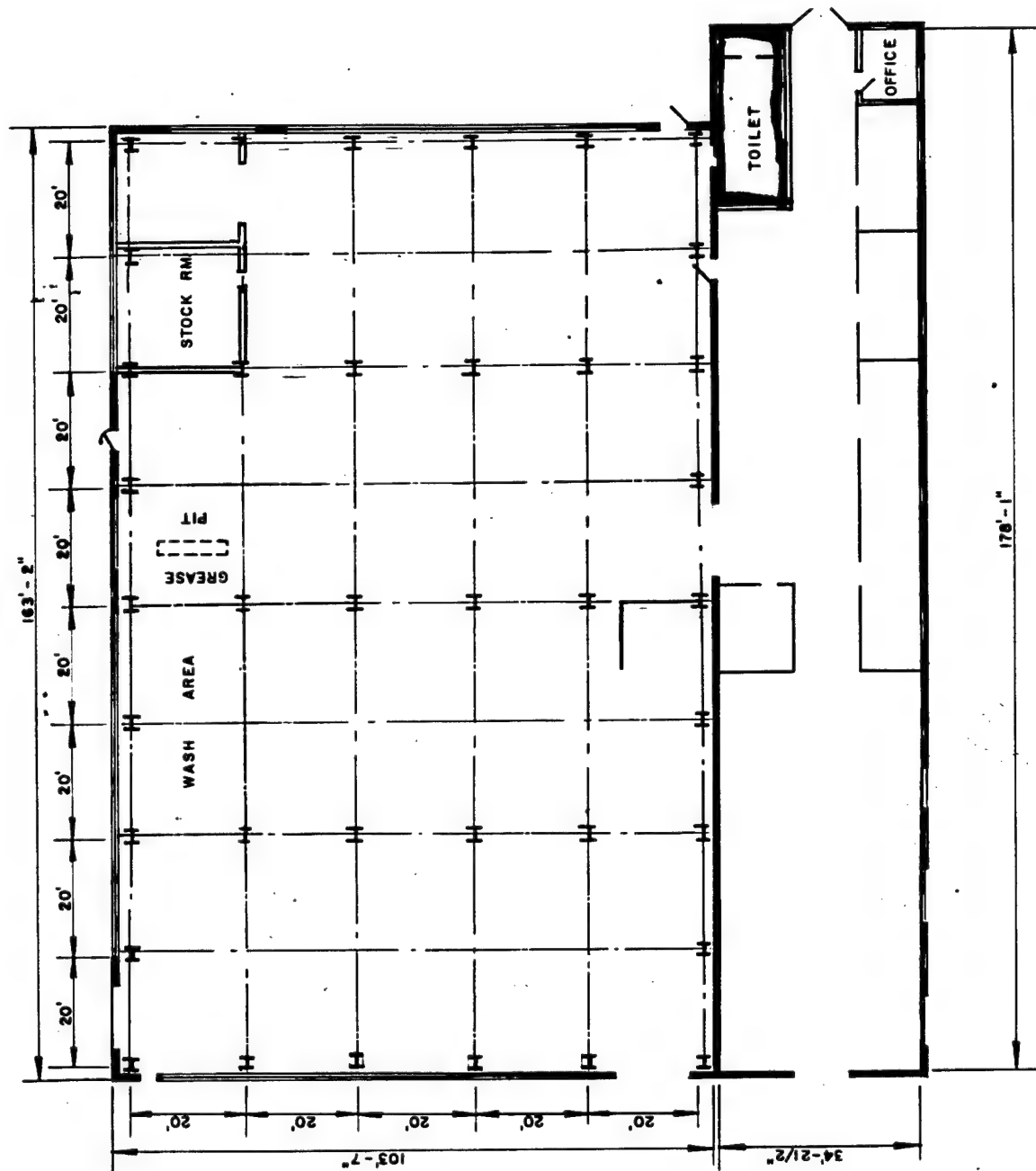
NET FLOOR AREA
21,495
Square feet

FLOOR CAPACITY
50,547.5 SOLDS. N. SOLDS.



WATERVLIET ARSENAL
 TROY, N.Y.
 Drawn by: J.R. [Signature]
 Date: [Date]
 Appd by: [Signature]
 Revisions: [Table with 2 columns: No., Description]

NET FLOOR AREA
 11,855
 Square Feet
FLOOR CAPACITY



WATERVLIET ARSENAL

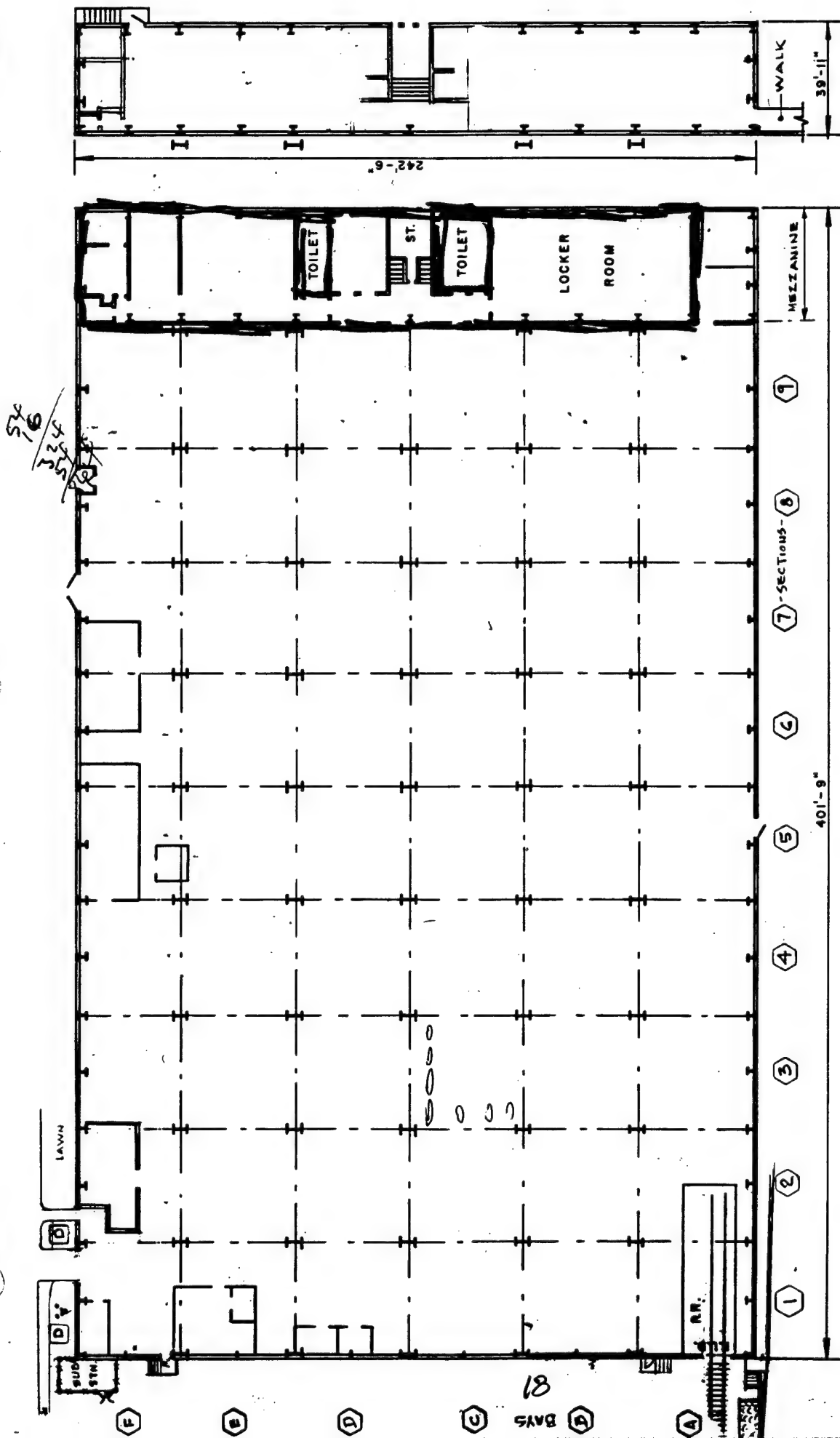
WATERVLIET, N.Y.

Drawn by: J.R.GANGEMI, A.E. Checked by: J.R.GANGEMI, A.E.
 Revisions: _____ Date: _____

**FLOOR PLAN
 GARAGE (MOTOR
 BUILDING NO. 15**

Scale: 1" = 30'-0" Date: _____

NET FLOOR AREA
 22,865
 Square feet
FLOOR CAPACITY
 1000 LBS
 Per square foot

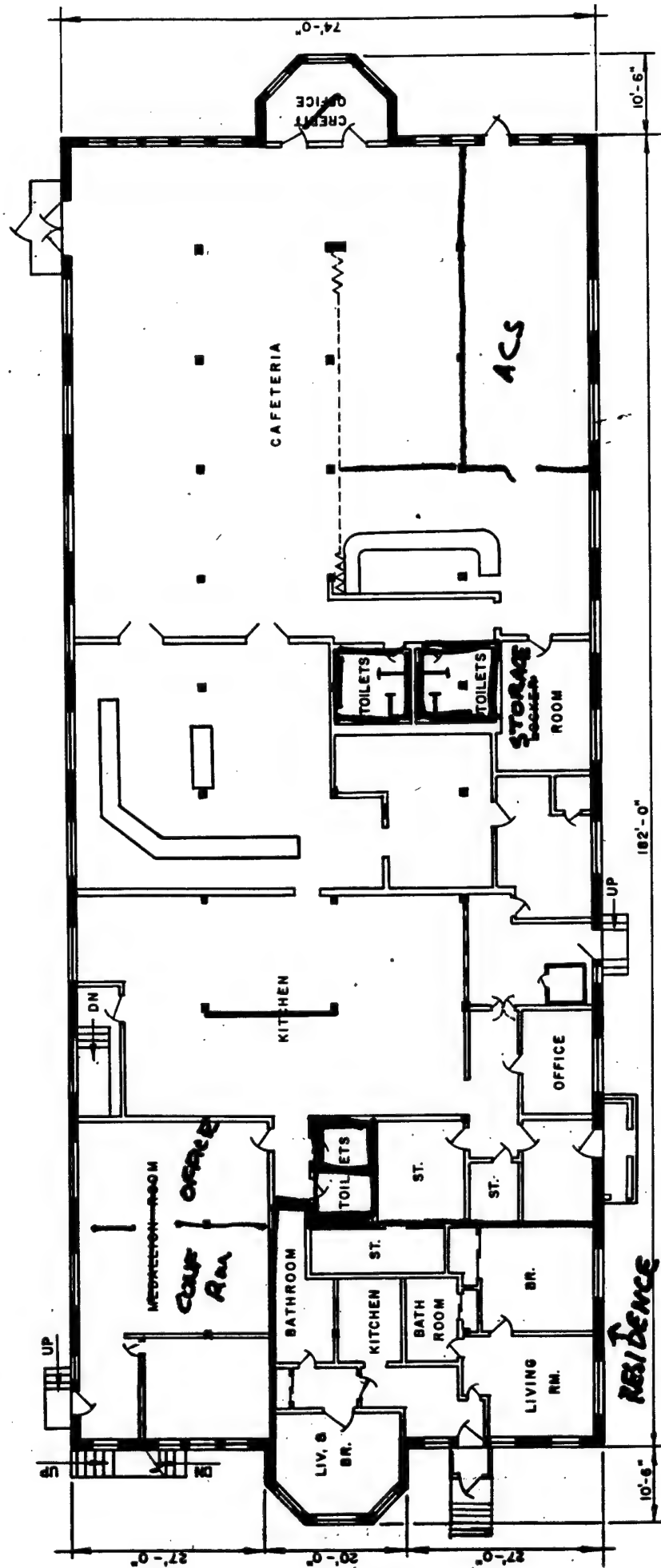


FIRST FLOOR

WATERVLIET ARSENAL WATERVLIET, N.Y.	
Drawn by: J.R. GANEMAN Date:	Checked by: D. J. GANEMAN Date:
FIRST FLOOR MEZZANINE BUILDING NO. 20	

NET FLOOR AREA
108,590
Square feet

FLOOR CAPACITY
1000 LBS - 100 LBS
Per square foot



WATERVLIET ARSENAL

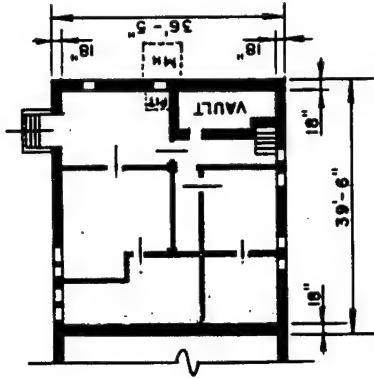
Drawn by: J.R. GANEM
 Date: 3/72
 Revisions: 1
 MAIN FLOOR
 CAFETERIA & VISITING
 OFFICERS QUARTERS

14990
 - 1410
 13,580

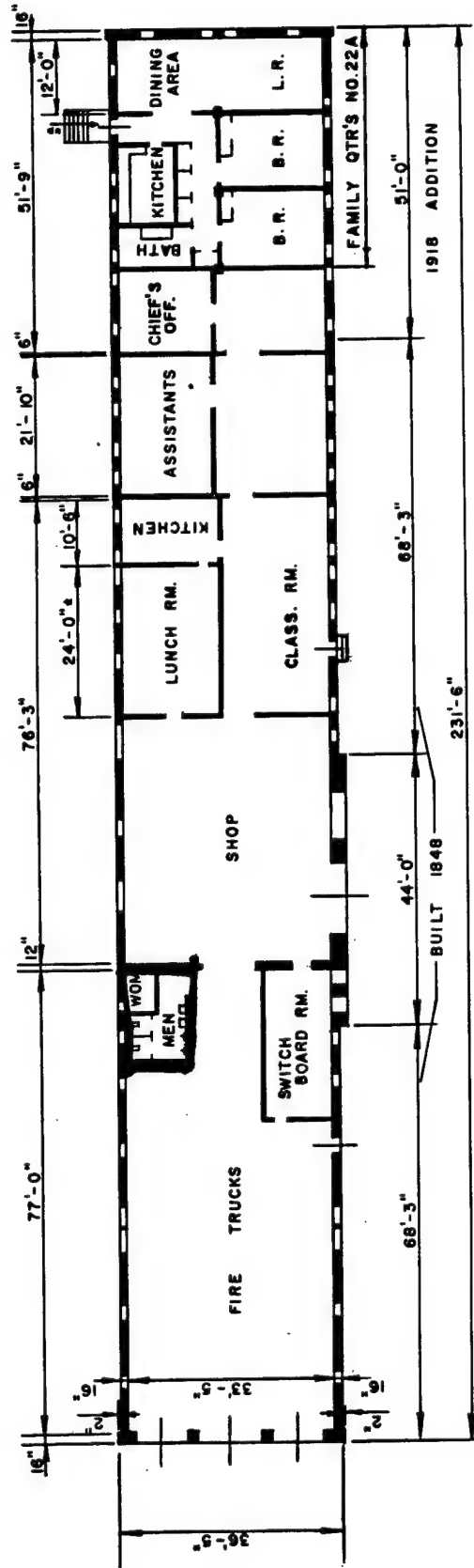
47
 30
 1410

NET FLOOR AREA
 14,990
 Square feet
 FLOOR CAPACITY

7'-0" CLG. HT.



BASEMENT



FIRST FLOOR

WATERVLIET ARSENAL

WATERVLIET, N.Y.

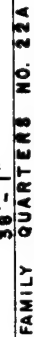
Drawn by: J.R. GANEM
 Checked by: J.C. KASHNER
 Revisions: _____
 Date: _____

1ST. FL. & BASEMENT PLANS
FIRE STATION

NET FLOOR AREA

18,959
 Square Feet

FLOOR CAPACITY

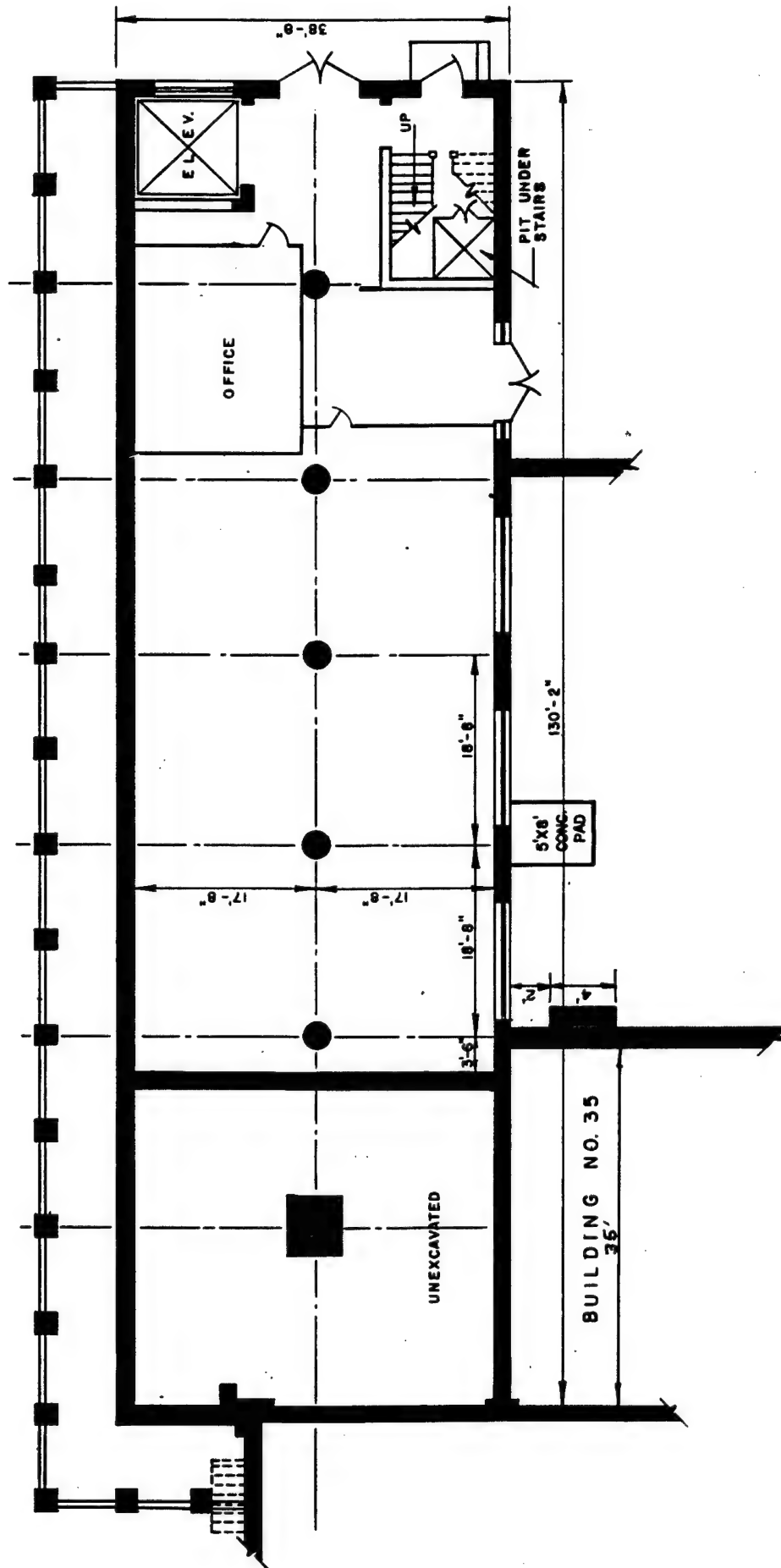


WATERVLIET, N.Y.

**FIRE STATION
BUILDING NO. 22**

Scale: $1/\alpha'' = 1 - \alpha''$ hqto.

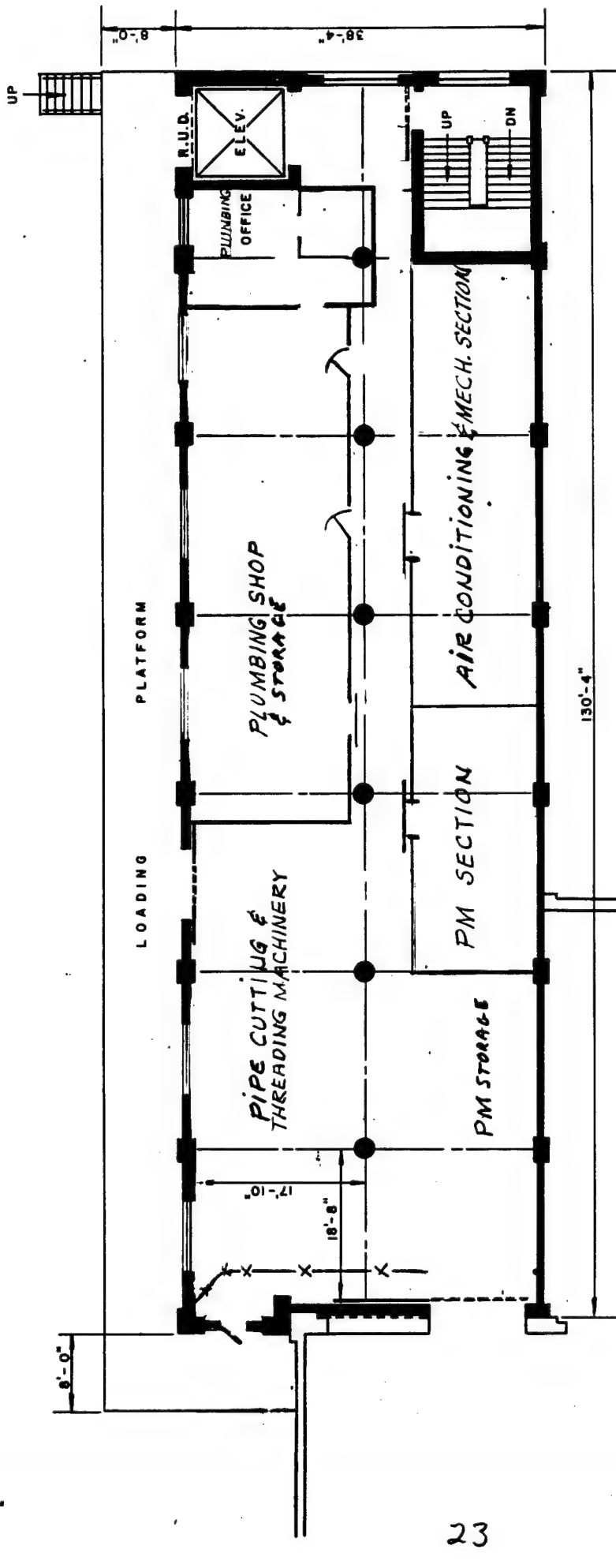
Per square foot.



WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGEML	By: J.R. GANGEML
Revisions	Date
BASEMENT FLOOR OF TOOL PROCESSING BUILDING	



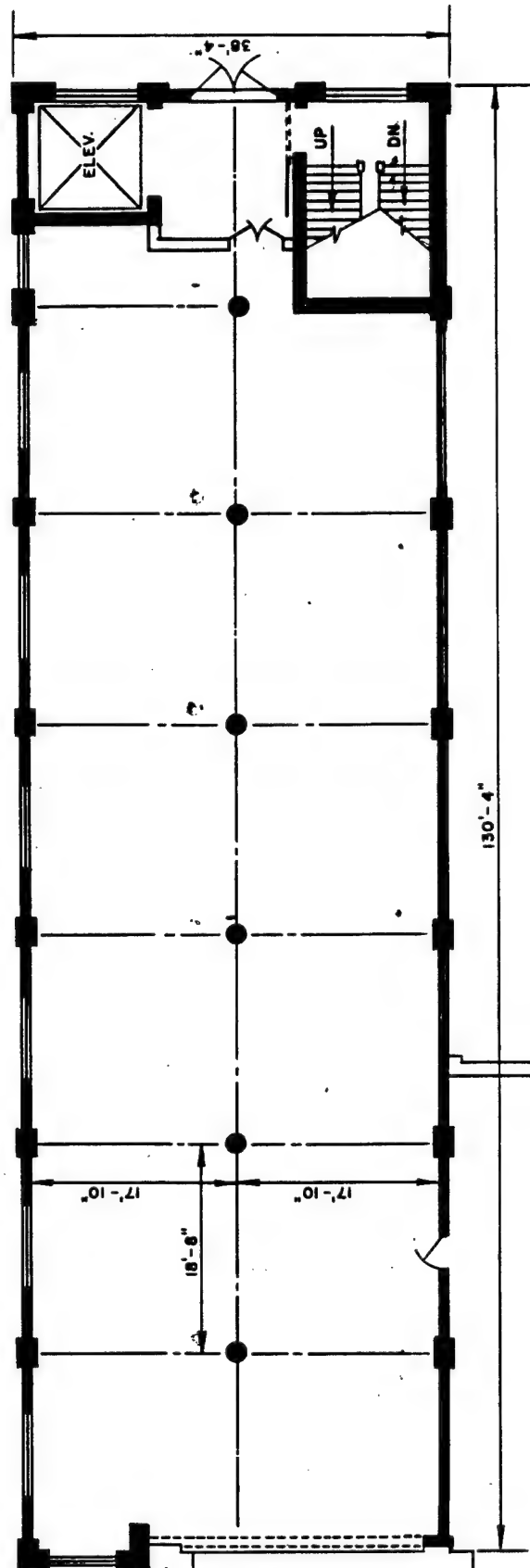
NET FLOOR AREA
3,370
Square feet
FLOOR CAPACITY



← BUILDING NO. 35 →

WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn By: J.R. GANEM	Checked By: J.R. GANEM
Revisions	Date
FIRST FLOOR TOOL PROCESSING BUILDING	

NET FLOOR AREA
9,410
Square feet
FLOOR CAPACITY



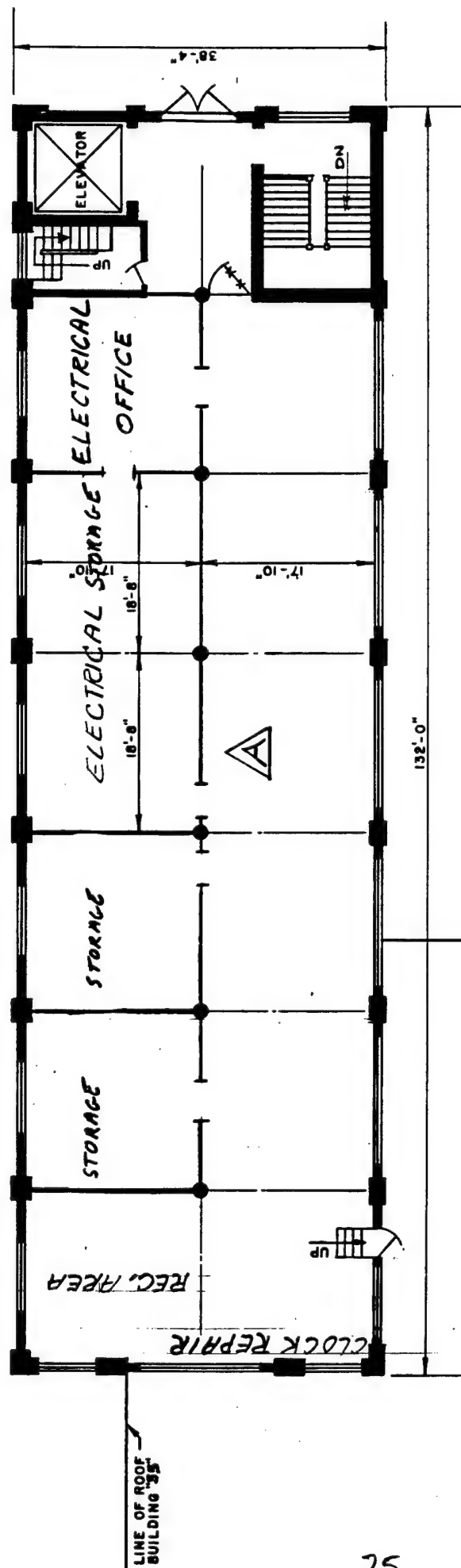
BUILDING NO. 35

24

WATERVLIET ARSENAL

WATERVLIET ARSENAL WAT. T. N.Y.	by: <i>J.R. Gangemi</i>	Revisions	Date
Drawn by: J.R. GANGEMI			
SECOND FLOOR TOOL PROCESSING BUILDING			

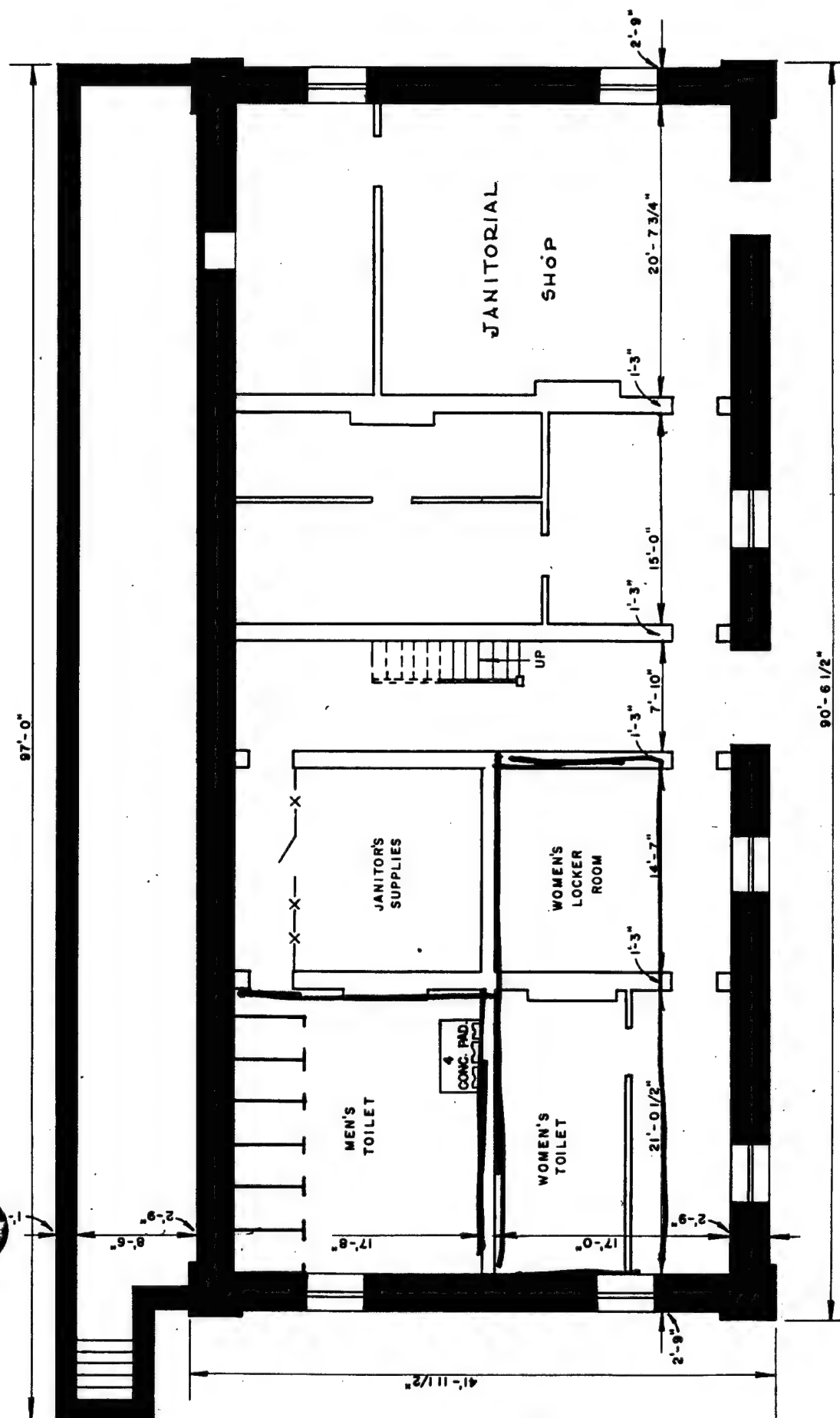
NET FLOOR AREA
5,410
Square feet
FLOOR CAPACITY



BUILDING NO. 35

NET FLOOR AREA
8,410
Square feet
FLOOR CAPACITY

WATERVLIET ARSENAL	
Drawn by: J.R. GANEMINI	Checked by: J.R. GANEMINI
Revisions	Date
A	9-78
THIRD FLOOR PLAN TOOL PROCESSING BUILDING NO. 35	



WATERVLIET ARSENÁL

WATERVLIET, N.Y.

Drawn by: J.R.GANGEMI, A.E. App'd
BASEMENT FLOOR PLAN

Date _____

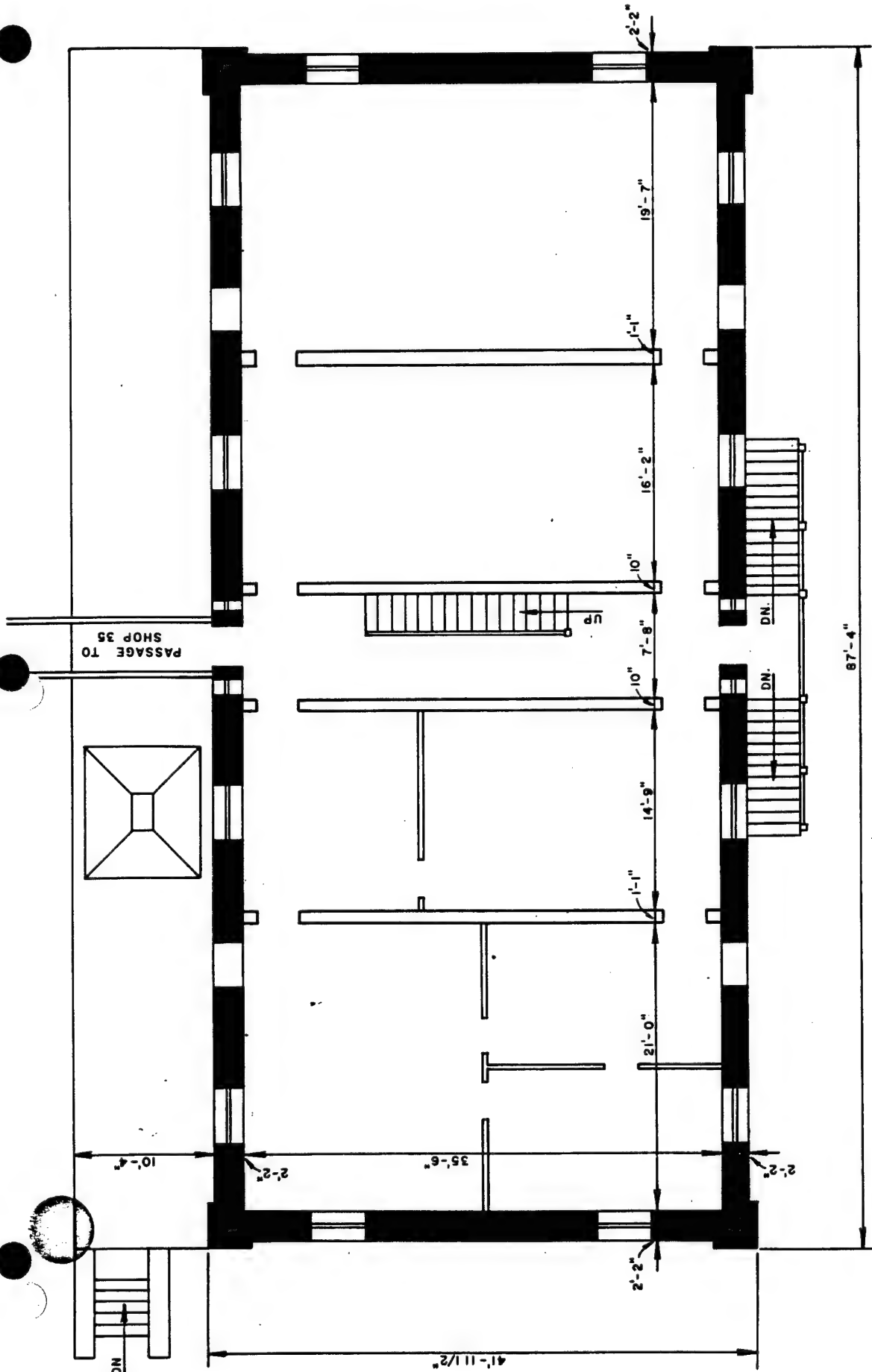
Revisions

BASEMENT FLOOR PLAN

Scale: 3/32" = 1'-0" Date:

NET FLOOR AREA
4,212
Square feet

FLOOR CAPACITY
1,000 LBS
Per square foot



WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANGE, A.E. App'd by: *[Signature]* Date: *[Blank]*

Revisions

Date

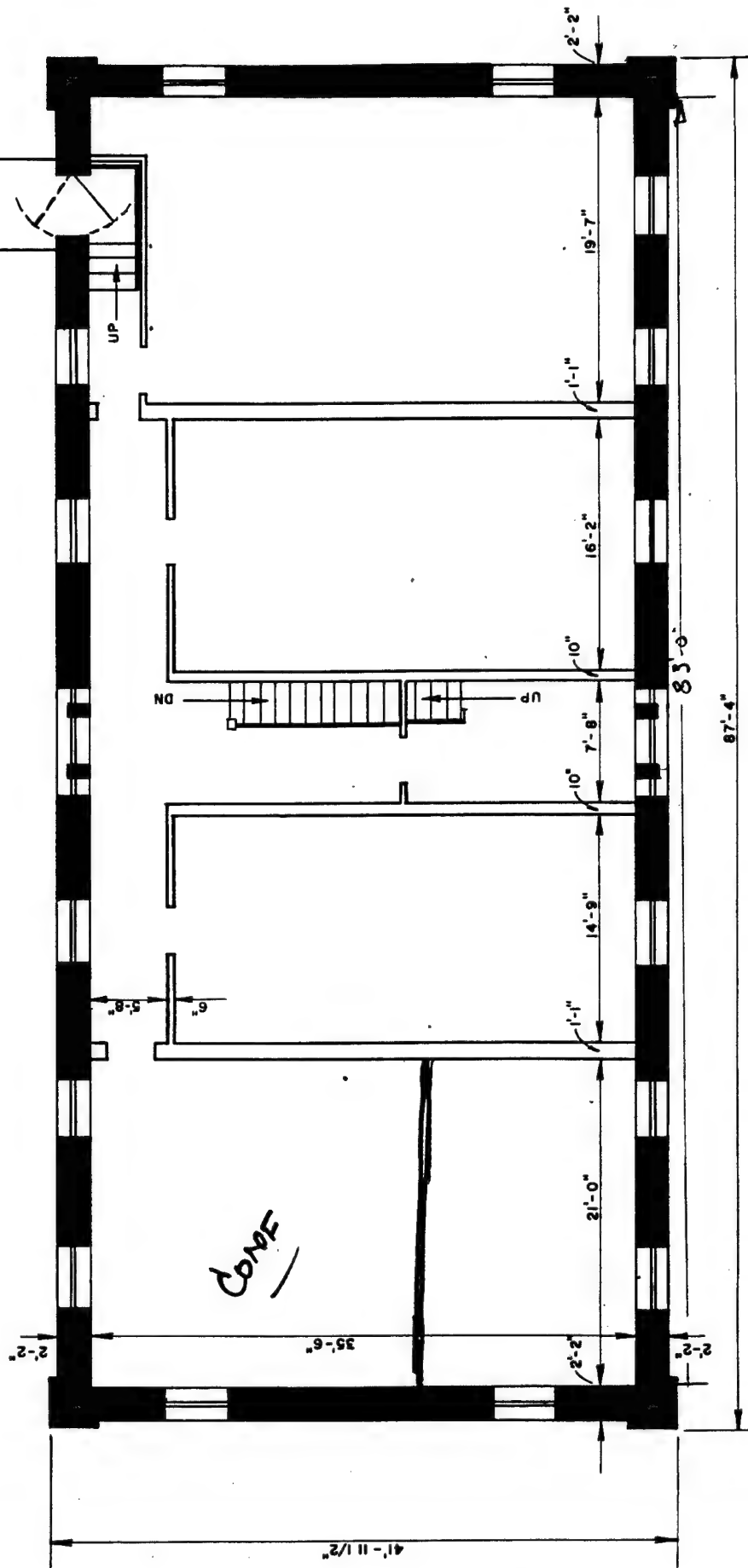
**FIRST FLOOR PLAN
METHODS & QUALITY
CONTROL BUILDING
BUILDING NO. 24**

Scale: 3/32" = 1'-0" Date: *[Blank]*



NET FLOOR AREA
4,434
Square feet

FLOOR CAPACITY
Per square foot



WATERVLIET ARSENAL

WATERVLIET, N.Y.

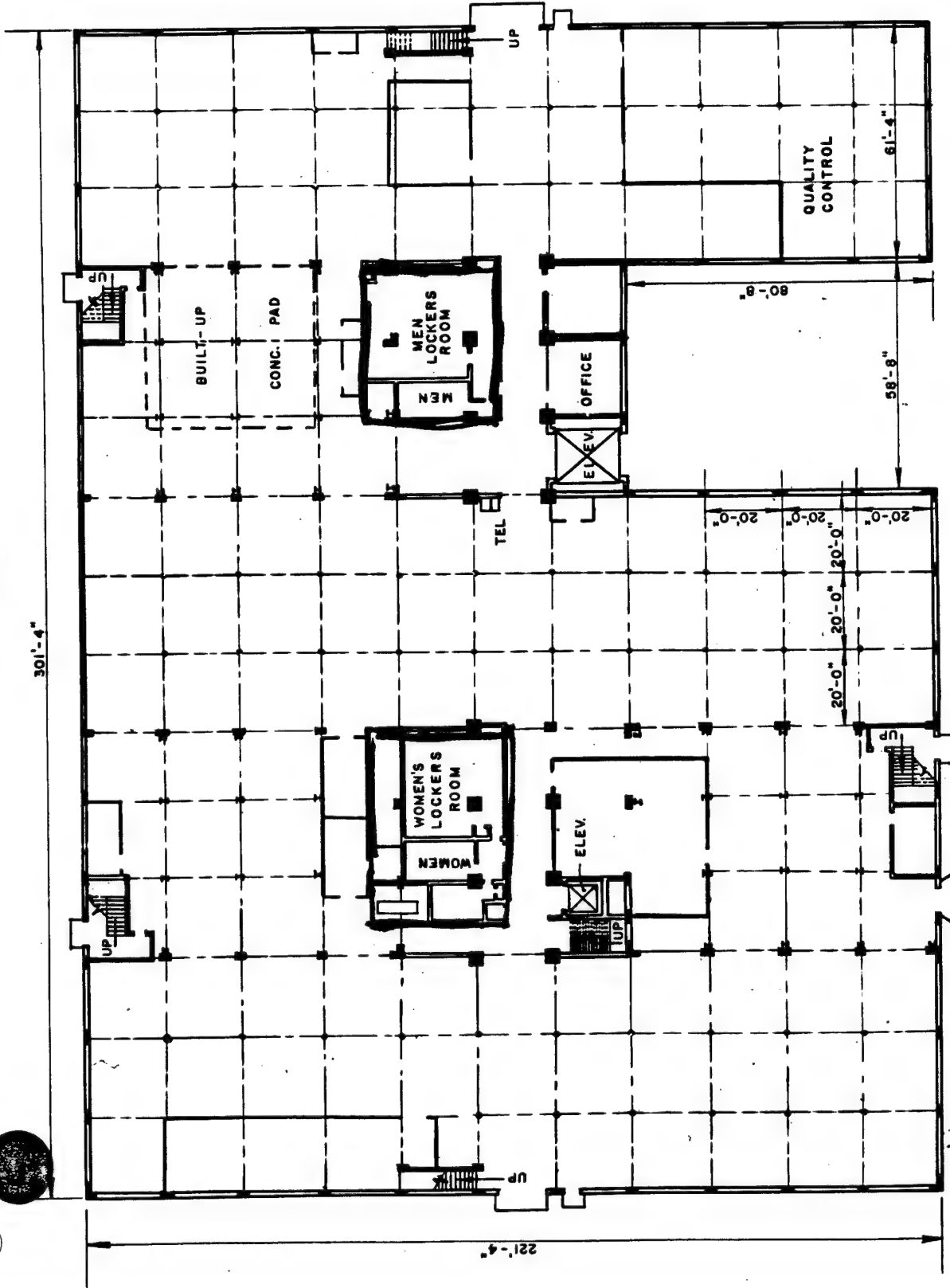
Drawn by: J.R. GANGE, A.E. App'd by: *J.R. Gange*
 SECOND FLOOR PLAN
 METHODS & QUALITY
 CONTROL BUILDING
 BUILDING NO. 24

Revisions

Date

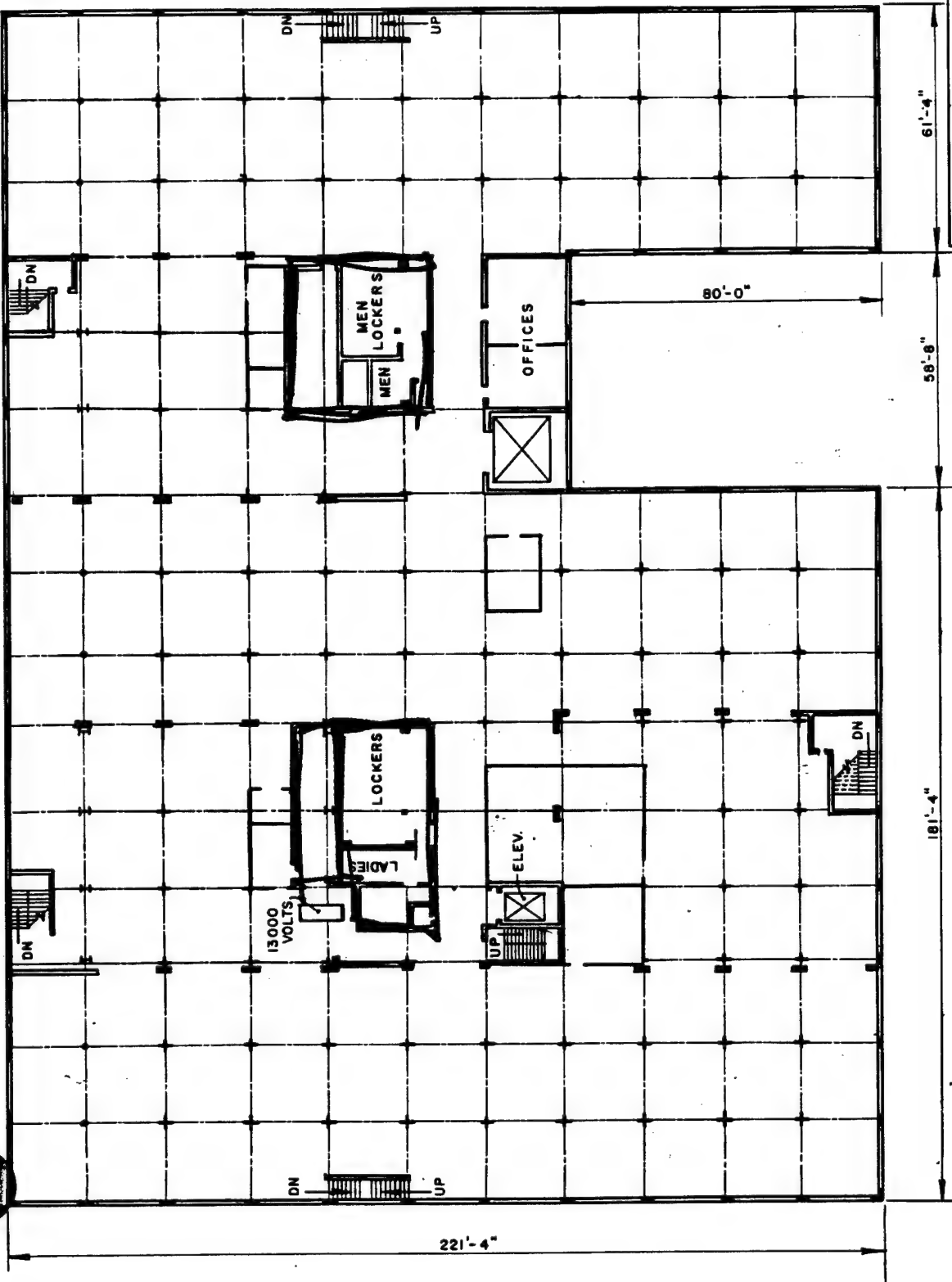
Scale: 3/32" = 1'-0" Date:

NET FLOOR AREA
 4,436
 Square feet
 FLOOR CAPACITY
 Per square foot



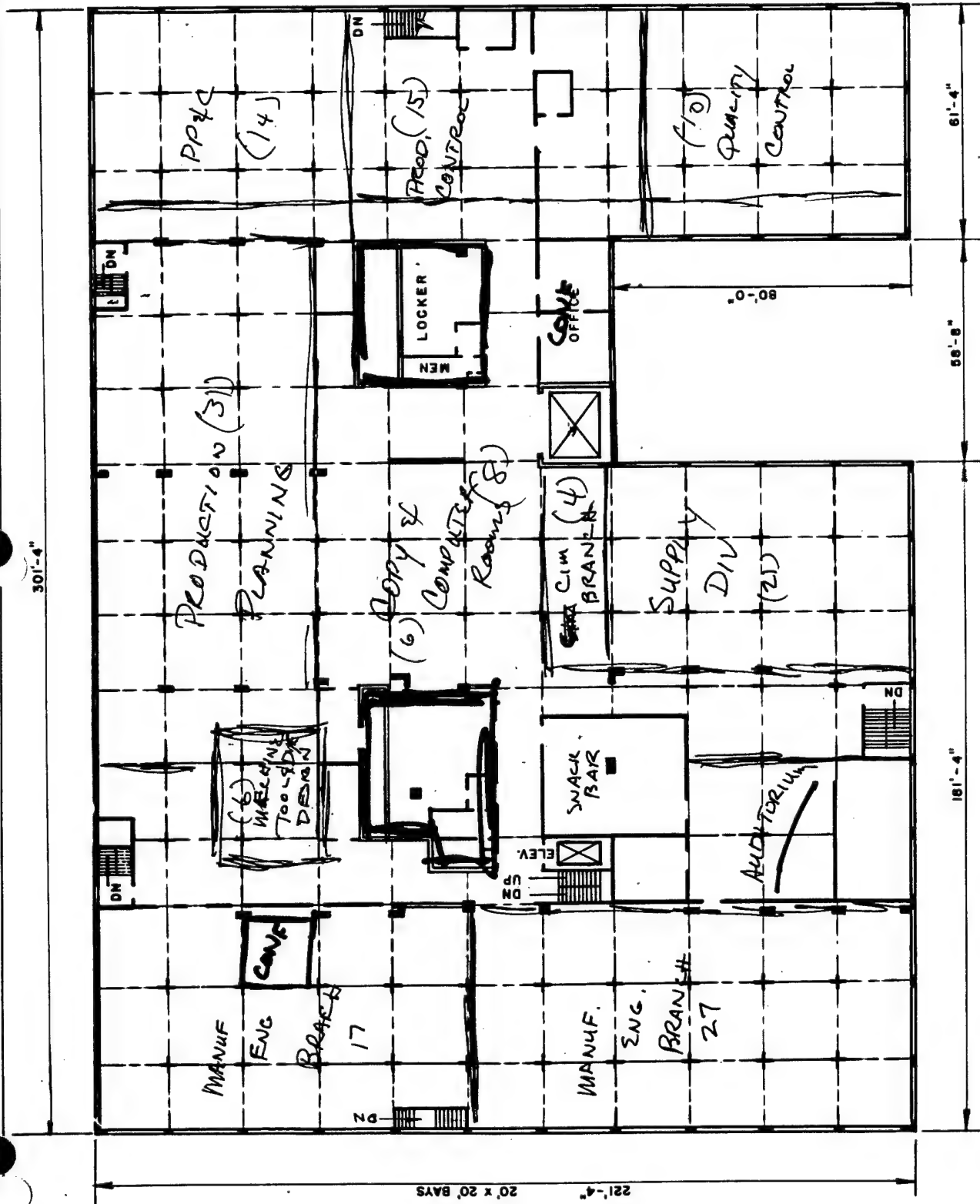
WATERVLIT ARSENAL	
WATERVLIT, N.Y.	
Drawn by: J.R. GANGEI, A.E.	App'd by: <i>J.R. Gangei</i>
Revisions	Date
FIRST FLOOR PLAN MACHINE SHOP BUILDING NO. 25	
Scale: 40' = 1" - 0" Date:	

NET FLOOR AREA
 60,950
 Square feet
 FLOOR CAPACITY
 1000 LBS
 Per square foot



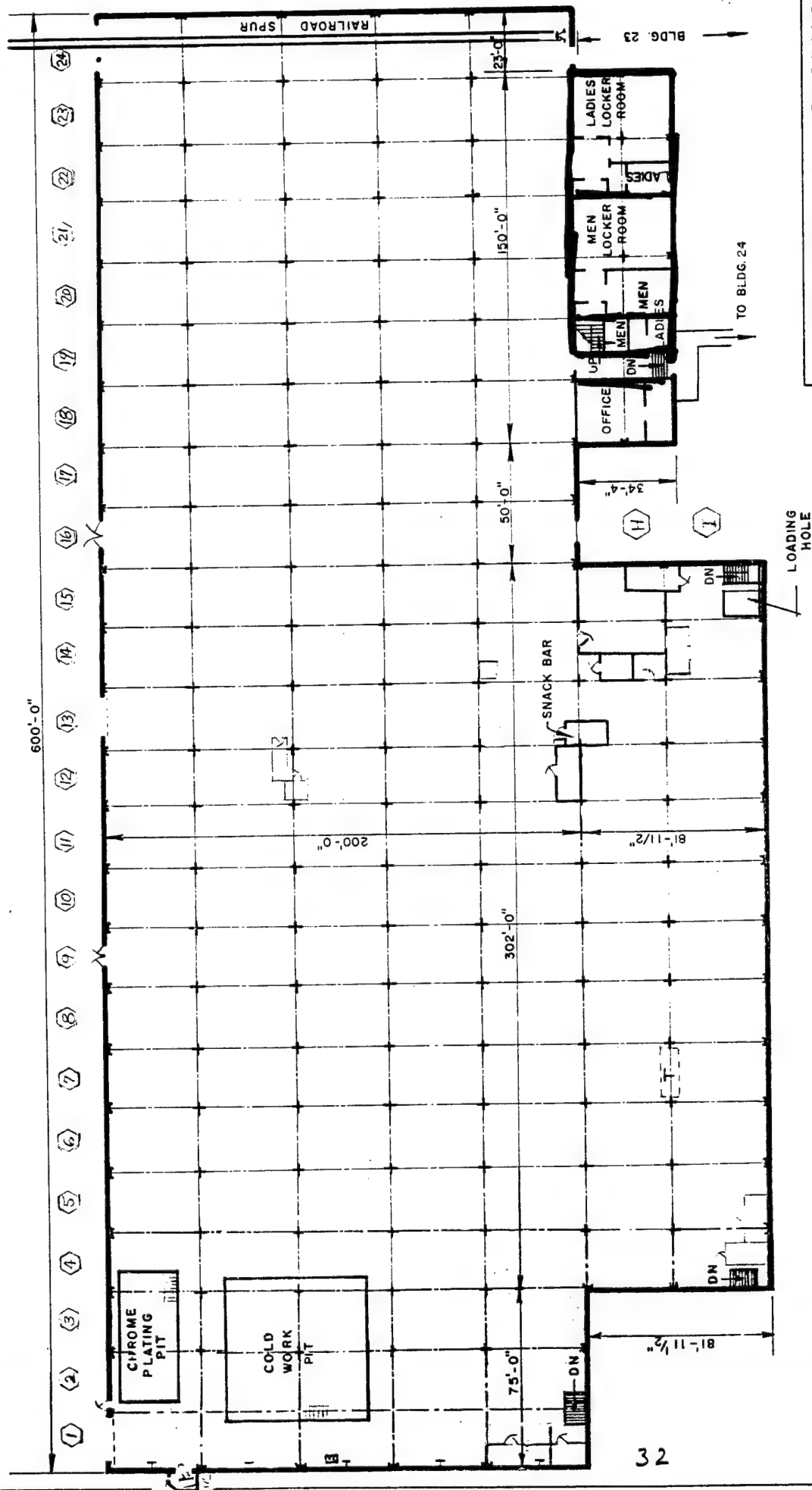
WATERLIET ARSENAL	
WATERLIET, N.Y.	
Drawn by: J.R. GANGE, A.E.	App'd by: <i>J. R. Gange</i>
Revisions	Date
SECOND FLOOR PLAN MACHINE SHOP BUILDING NO. 25	
Scale: 1" = 40'-0"	Date:

NET FLOOR AREA
Square feet
FLOOR CAPACITY
Per square foot



WATERVLIET ARSENAL
 WATERSIDE, N.Y.
 Drawn by: J.R. GANGLI, Jr.
 Checked by: J.R. GANGLI, Jr.
 Date:
 Revisions:
THIRD FLOOR PLAN
MACHINE SHOP
 BUILDING NO. 05

NET FLOOR AREA
 Square feet
61,990
 FLOOR CAPACITY



WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANEM, A.E. App'd by: J.R. GANEM

Revisions
Date
6/74

**MAIN FLOOR PLAN
PILOT LINE BUILDING
BUILDING NO. 35**

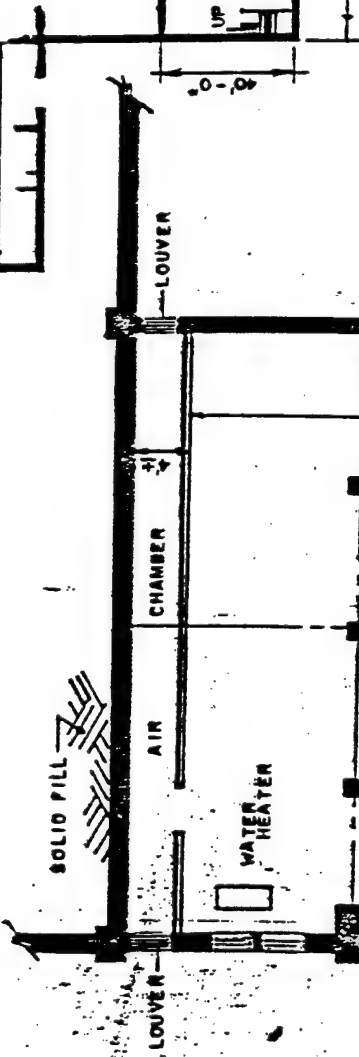
Scale: 1" = 60'-0" Date:

NET FLOOR AREA
151,000
Square feet

FLOOR CAPACITY
Per square foot

SOUTHEAST CORNER
"BASEMENT AREA NO. 2"
(SEE PLAN BELOW)

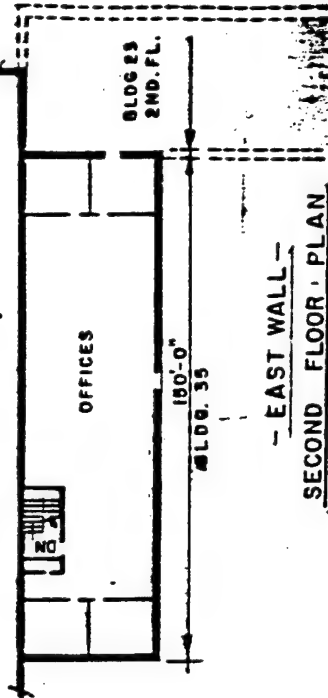
76'2"



SOUTH
WALL
OF
BLDG. 35

302'-0"
- EAST WALL -
PLAN - BASEMENT AREA NO. 1

BLDG. 35 SHOP AREA - 7



180'-0"
BLDG. 35
- EAST WALL -
SECOND FLOOR PLAN

SOUTHEAST CORNER BLDG. 35 -
BASEMENT PLAN - AREA NO. 2

SCALE 1/16" = 1'-0"

WATERVLIET ARSENAL

WATERVLIET, NY

Drawn by: J.R. GANGLI, A.E. App'd by: J.R. GANGLI, A.E.

Revised

Date

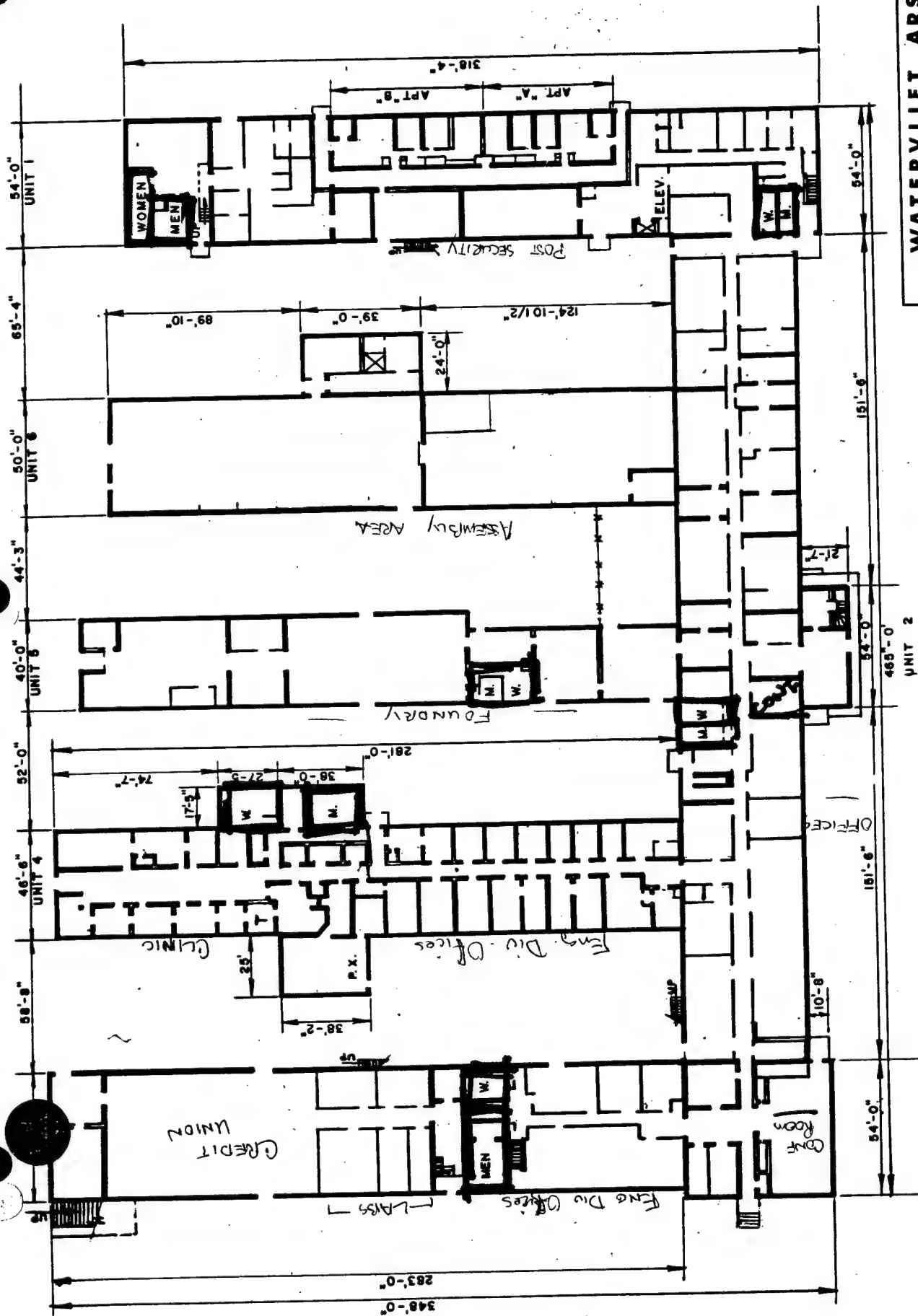
3-6

PILOT LINE
BUILDING

NET FLOOR AREA

Square Feet

1981



WATERVLIT ARSENAL

WATERVLIT, N.Y.

Drawn by: J.R. GANGE, A.E. App'd by: *J.R. Gange*

Revisions

Date

FIRST FLOOR PLAN

BENET LABORATORIES

BUILDING NO. 40

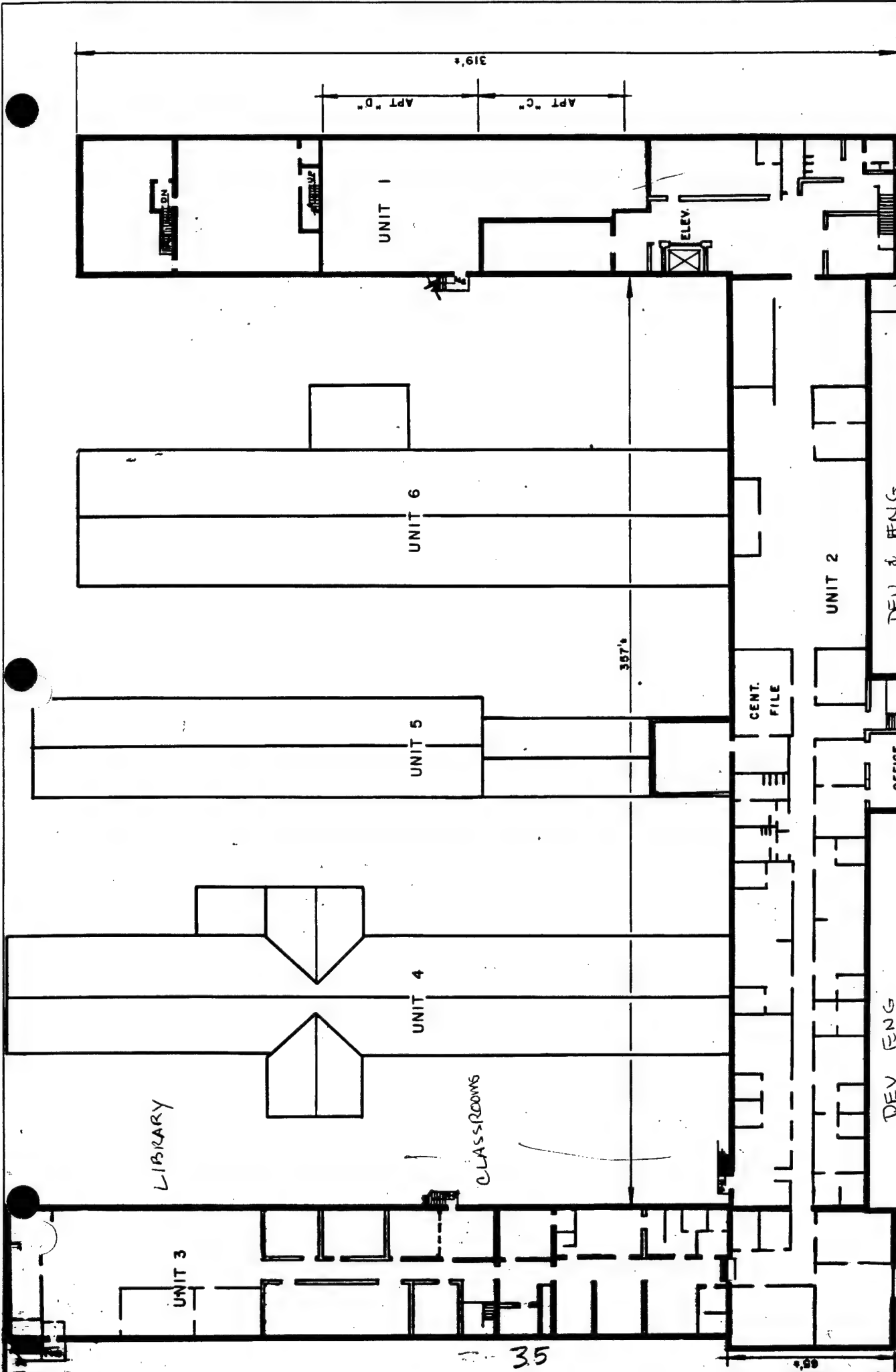
Scale: NO SCALE Date:

FENCE X X X X X

BROADWAY

NET FLOOR AREA
138,969
Square feet

FLOOR CAPACITY
1000 LBS
Per square foot



WATERVLIET ARSENAL
 WATERVLIET, N.Y.

Drawn by: J.R. GANGE, A.E. by: *J.R. Gange*

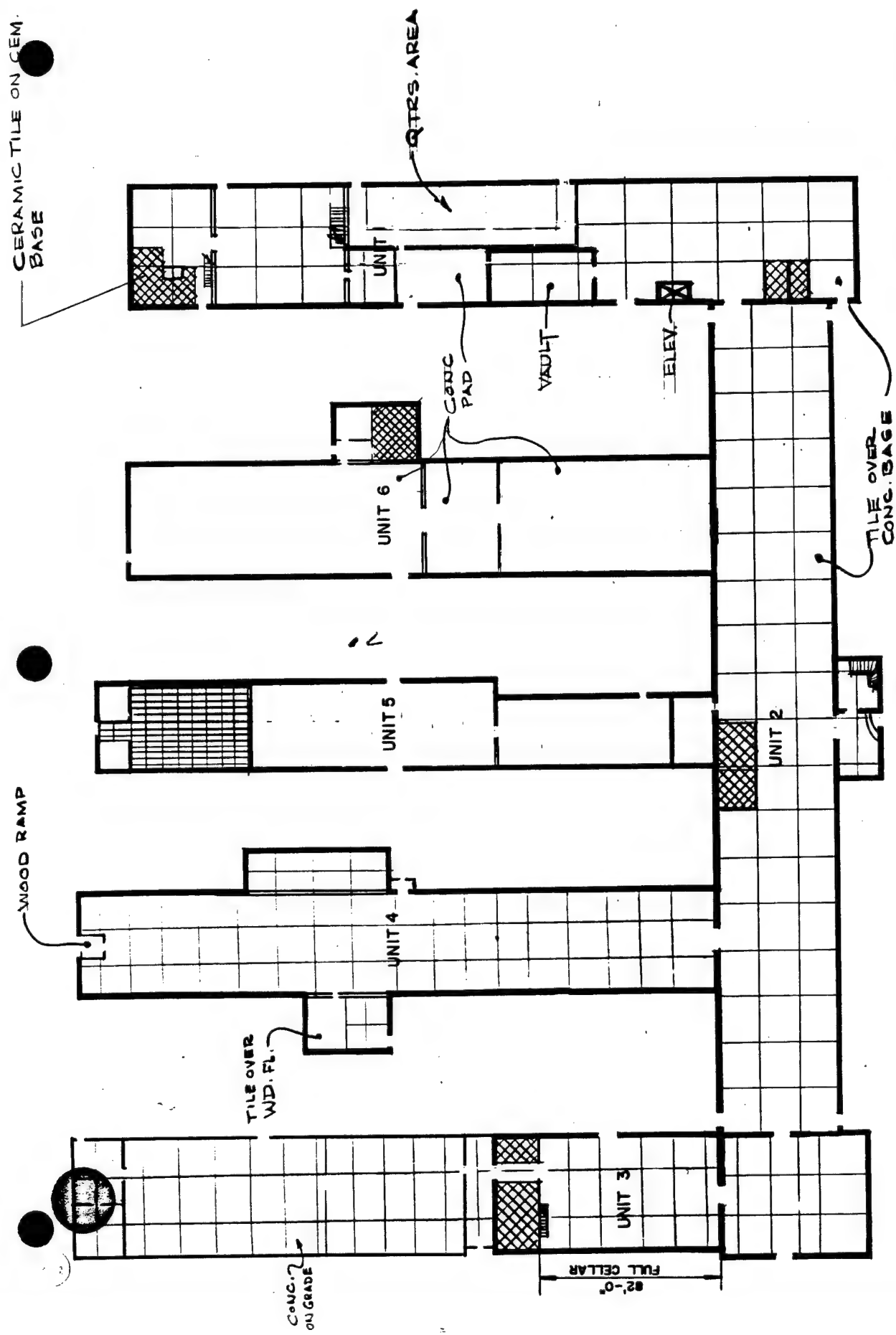
Revisions _____ Date _____

SECOND FLOOR
BENET LABORATORY
BUILDING NO. 40



NET FLOOR AREA
 Square feet

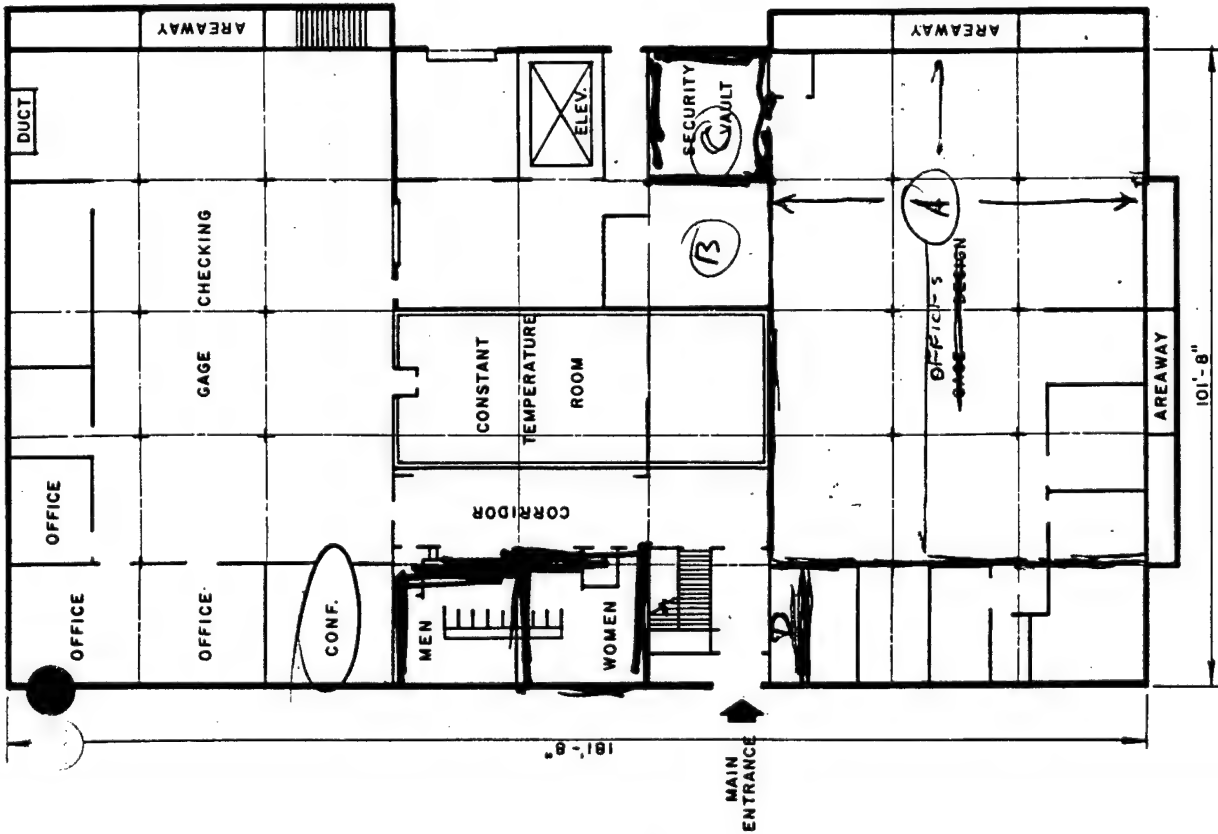
FLOOR CAPACITY
 84 LBS
 Per Square foot



WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGEI, A.E.	App'd by: J.C. Ketchum
Revisions	Date
BENET LABORATORIES BUILDING NO. 40	
Scale: 1" = 60'-0" Date:	

BASEMENT

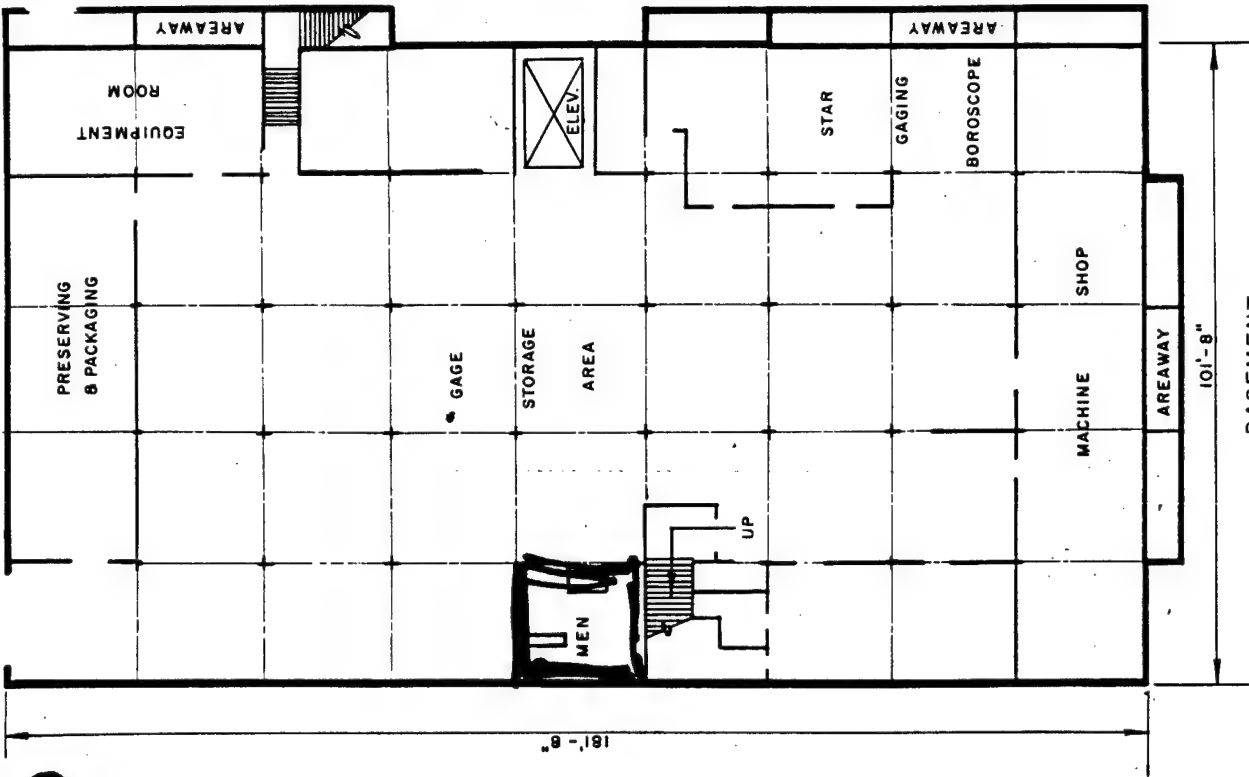
NET FLOOR AREA	FLOOR CAPACITY
Square feet	Per square foot



FIRST FLOOR

TOTAL DIMENSIONS
 $100' \times 300' = 30,000 \text{ FT}^2/\text{FL}$
 $= 60,000 \text{ FT}^2$

NET FLOOR AREA
 Square feet
 FLOOR CAPACITY
 1ST FL. 100LBS. - 2ND FL. 100LBS.
 Per square foot



BASEMENT

WATERVLIET ARSENAL

WATERVLIET, N.Y.

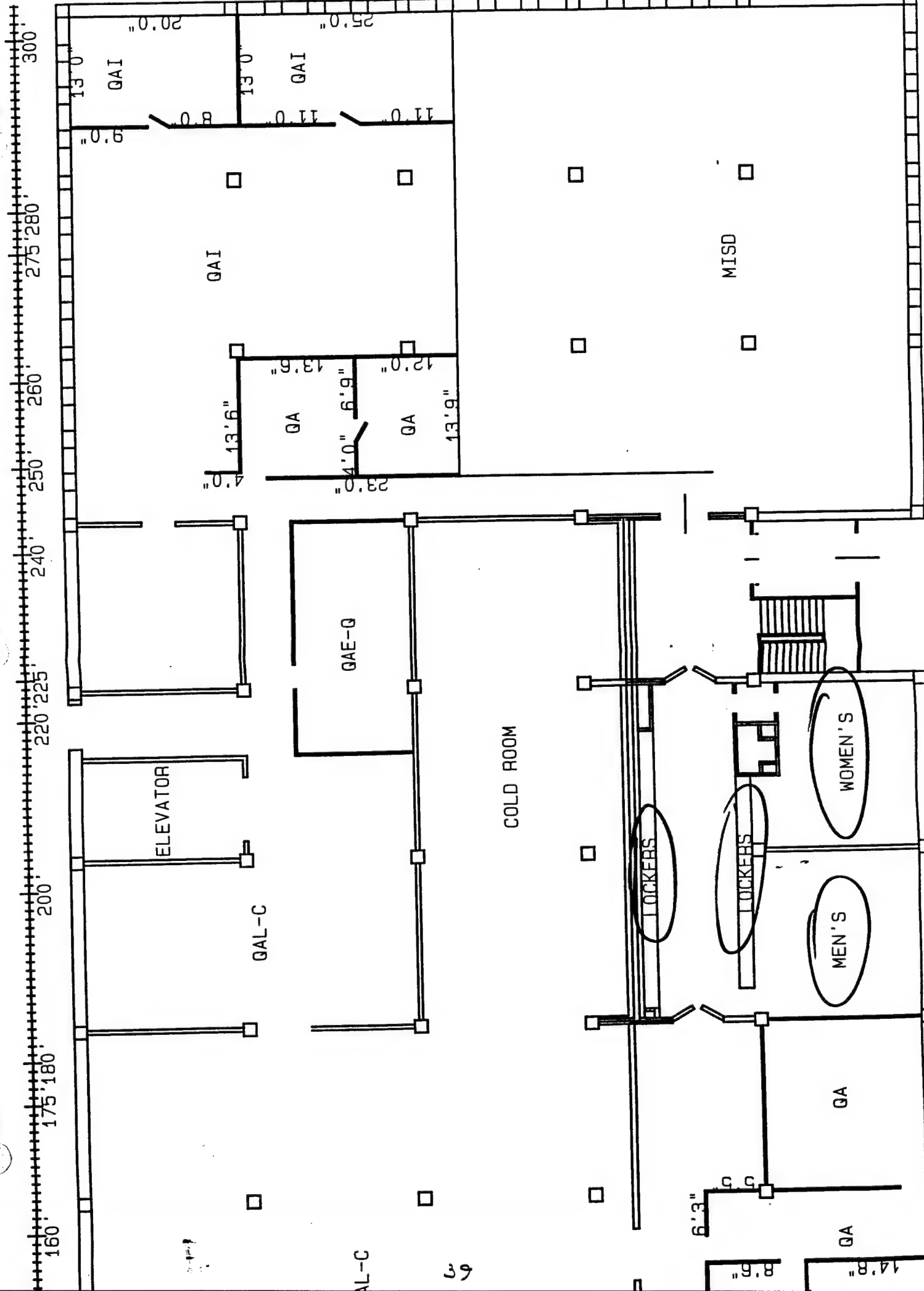
Drawn by: J.R. GANGE, A.E. App'd by: *J.R. Gange*

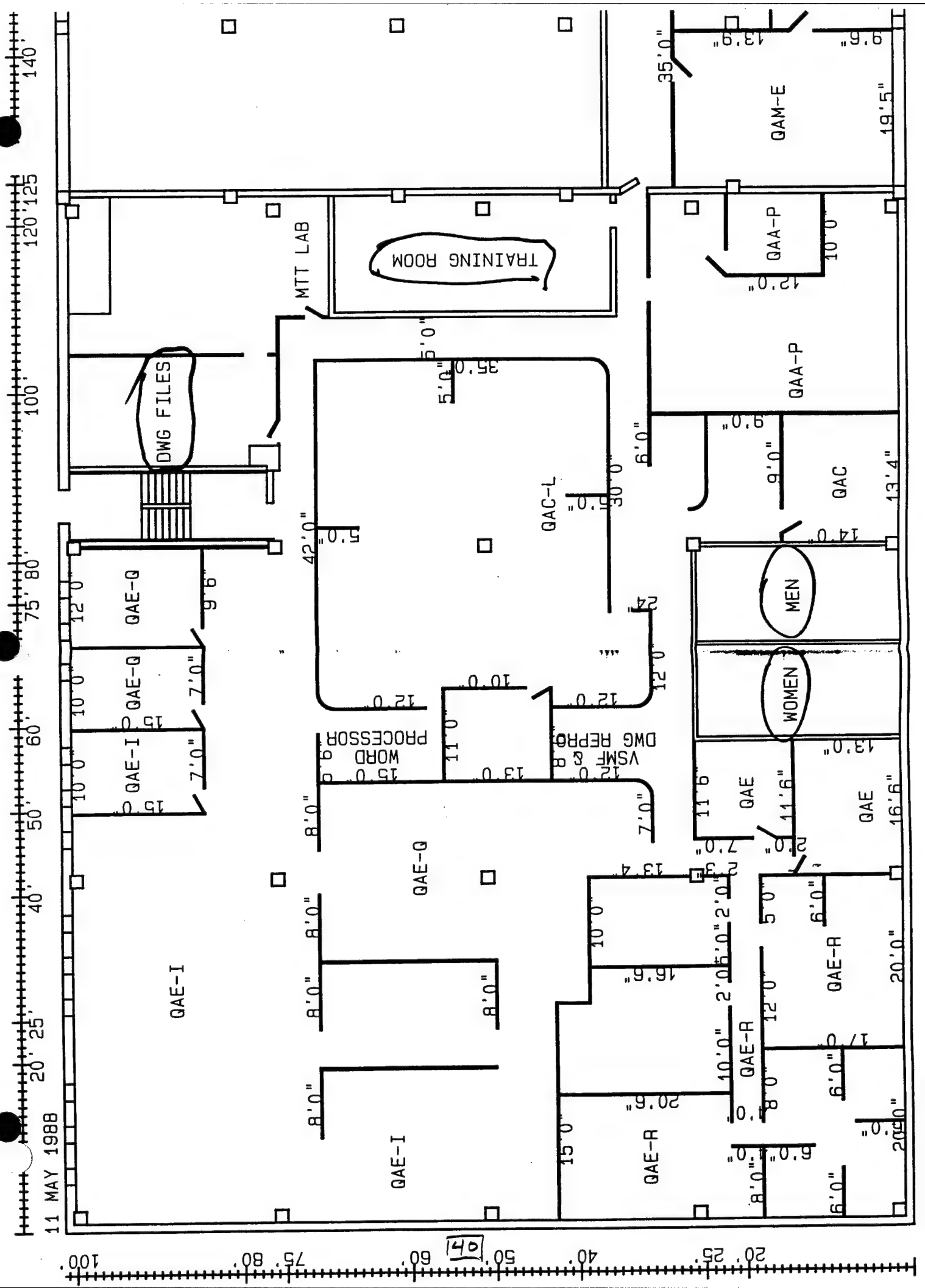
Revisions

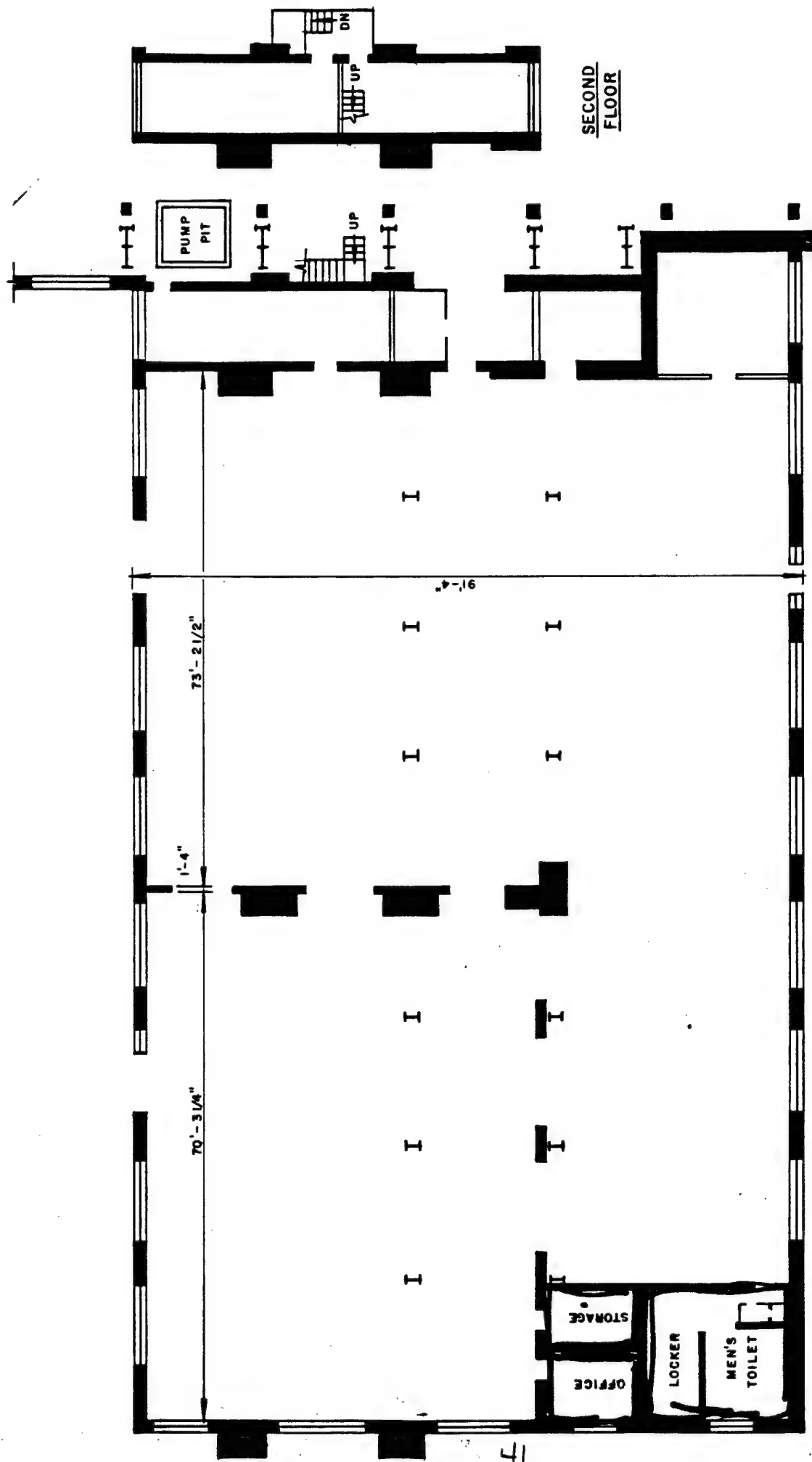
Date

DALLIBA HALL
 BUILDING NO. 44

Scale: 1" = 30'-0" Date:







MAIN FLOOR
HEAT TREAT WING

WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R.GANGEMI, A.E. App'd by: *J.R. Gangemi*

Heavy Caliber
Tube Shop

Building No. 110

Revisions

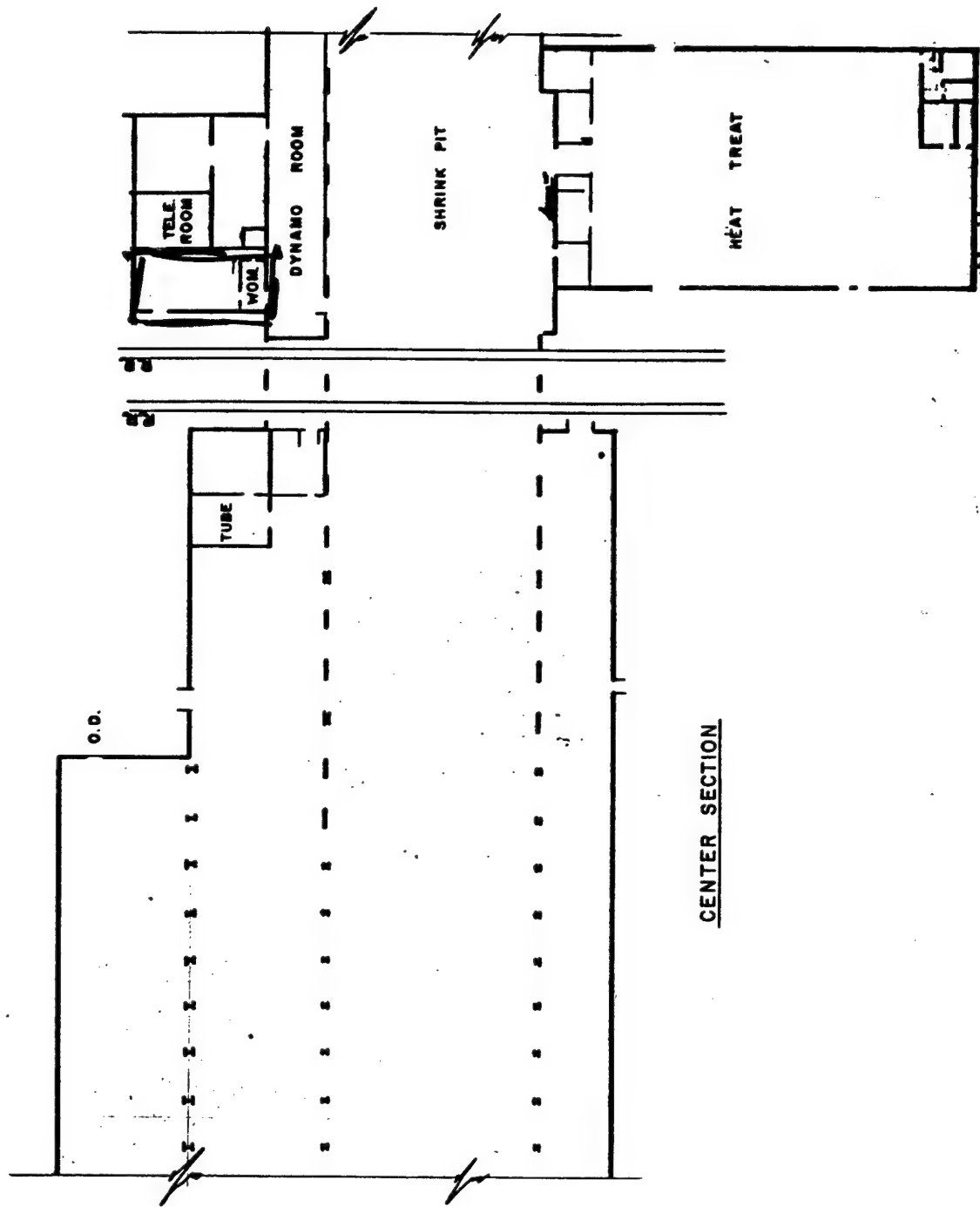
Date

NET FLOOR AREA

Square feet

FLOOR CAPACITY

1ST FL, 1,000 LBS - 2ND FL, 200 LBS
Per square foot



WATERVLIIET ARSENAL

WATERVLIIET, N.Y.

Drawn by: J.R. SAWYER, A.E. Check by: J.R. SAWYER, A.E.

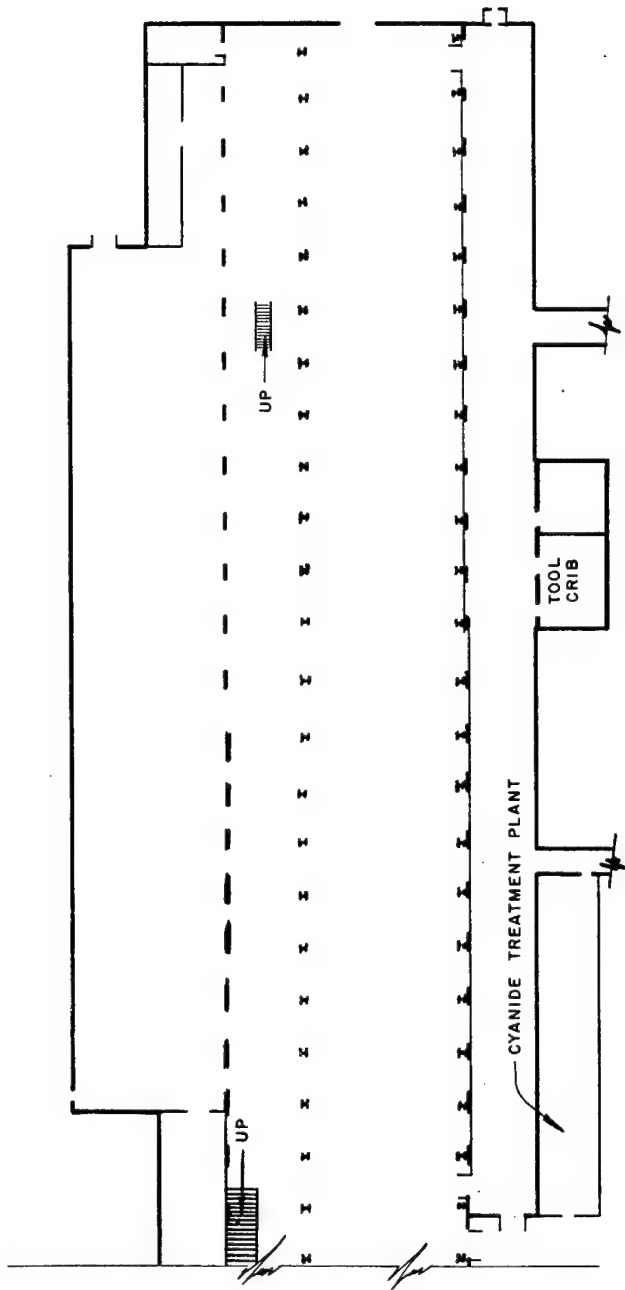
Revised

Date

HEAVY CALIBER
TUBE SHOP
BUILDING NO. 110

Scale: 1" = 40'-0" Date:

NET FLOOR AREA
211,928
Square feet
FLOOR CAPACITY
1000-200-200 LBS
per square foot



NORTH END

WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANEMI, A.E. App'd by: J.C. Kesteven Date: _____

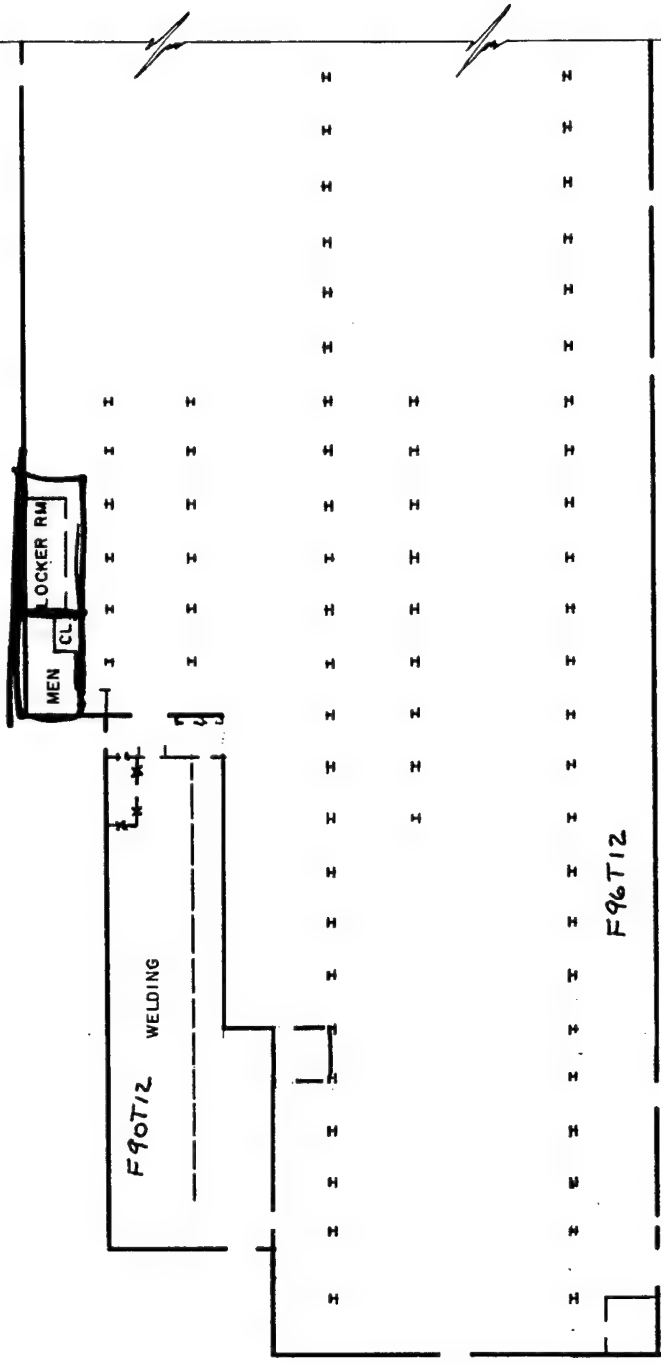
HEAVY CALIBER
TUBE SHOP

BUILDING NO. 110

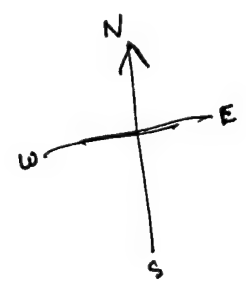
Scale: 1" = 40'-0" Date: _____

NET FLOOR AREA
211,625
Square feet

FLOOR CAPACITY
1000-200-200 LBS
Per square foot



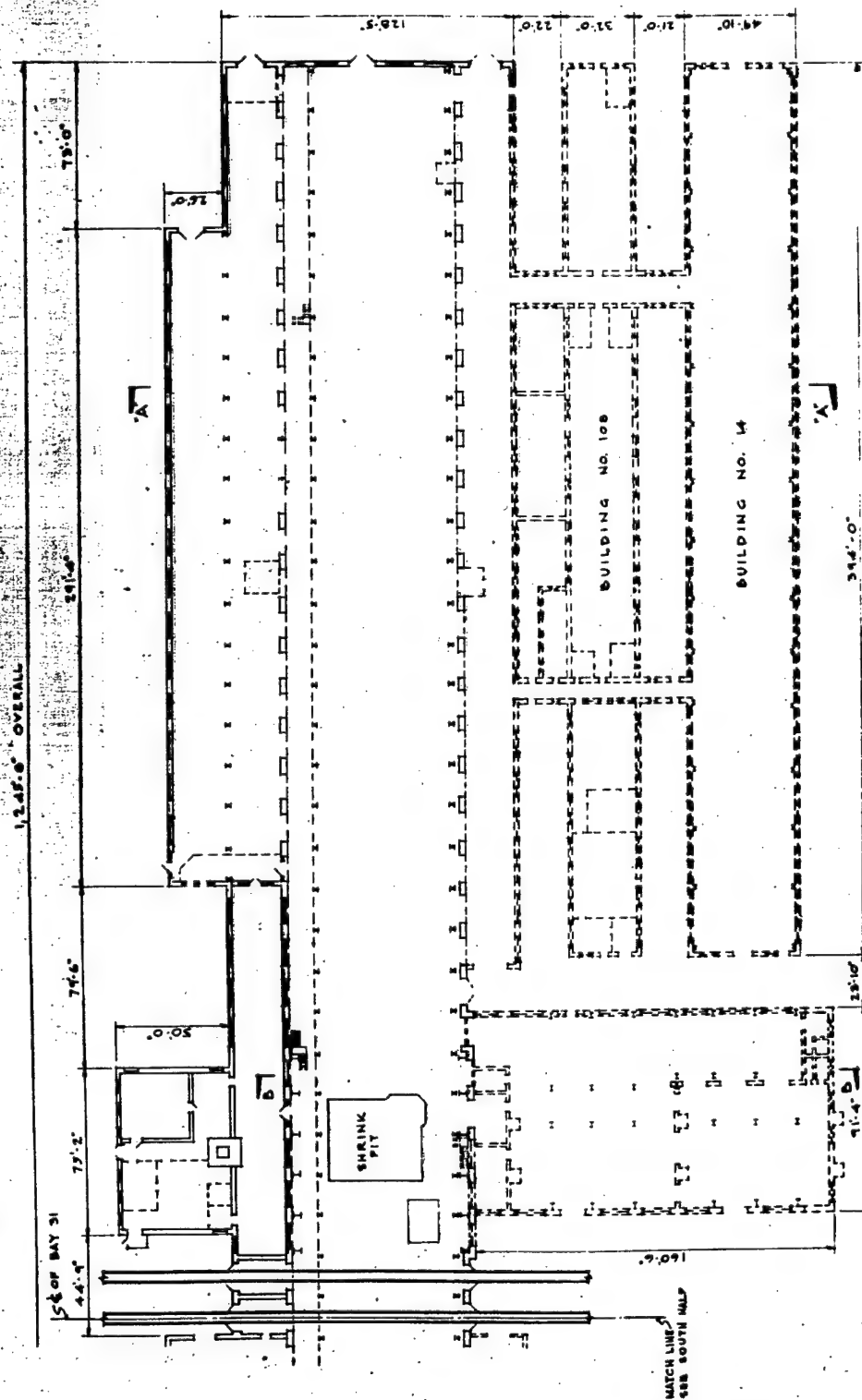
SOUTH END



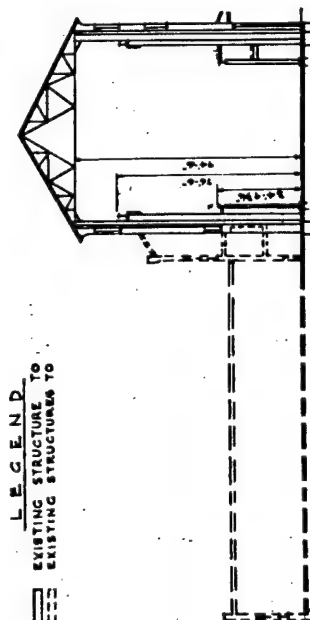
NET FLOOR AREA
211,625
Square feet
FLOOR CAPACITY
1000-200-200 LBS
Per square foot

WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGEML, A.E.	App'd by: <i>[Signature]</i>
Revisions	Date
HEAVY CALIBER TUBE SHOP BUILDING NO. 110	
Scale: 1" = 40'-0" Date:	

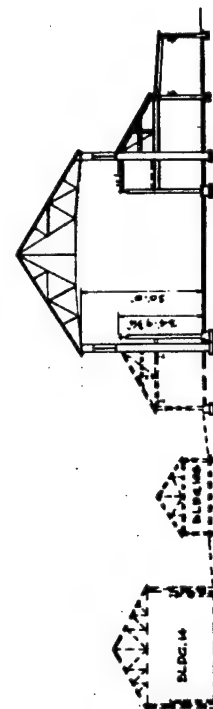
OUTLINE APPLICATION



FIRST FLOOR PLAN:

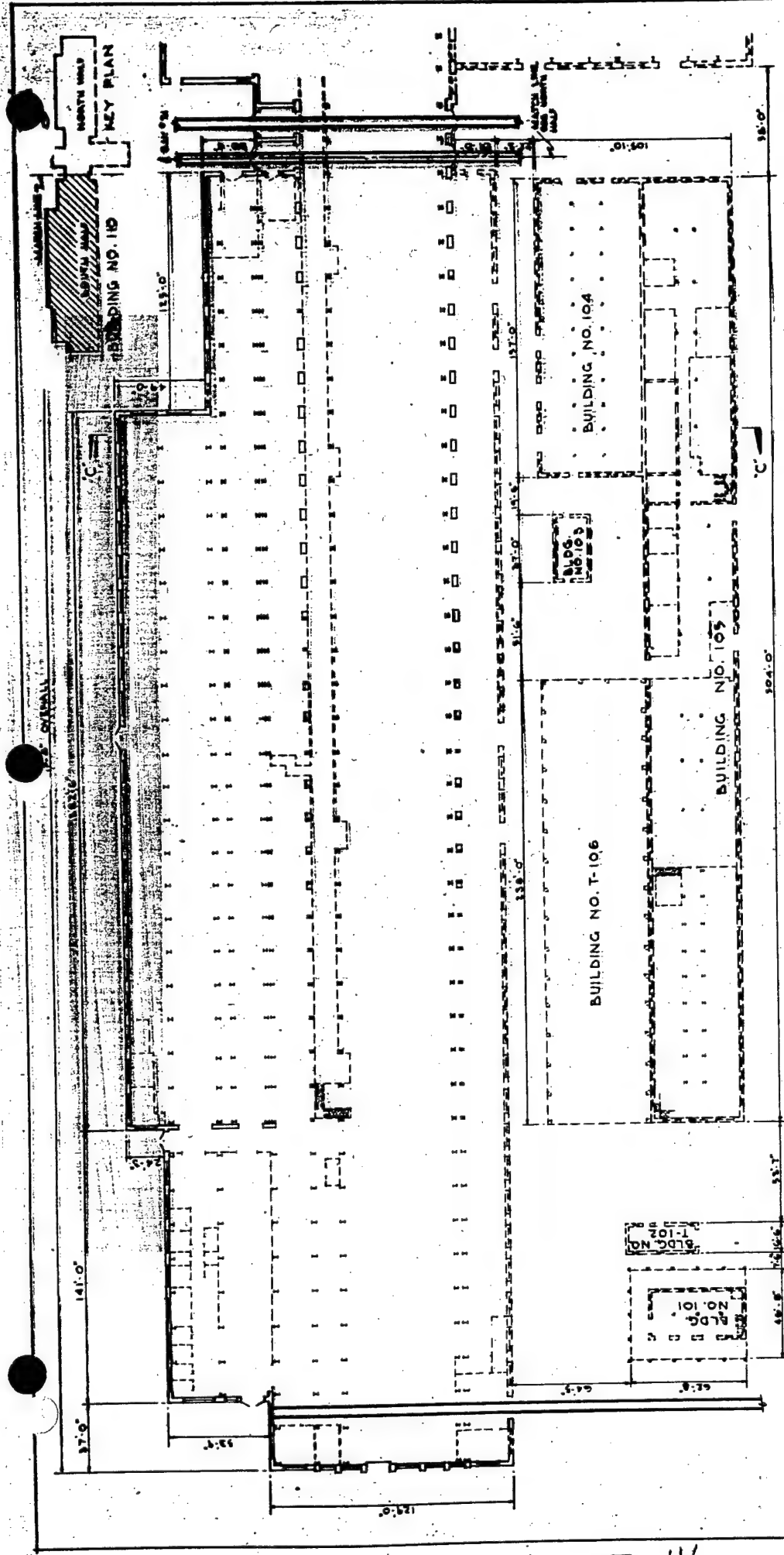


SECTION "B-B"

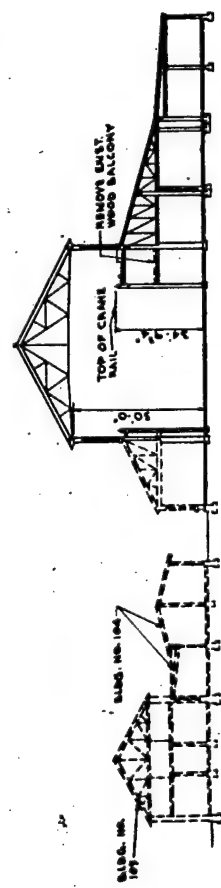


SECTION "A-A"

BUILDING NO. 110
FLOOR PLAN - NORTH HALF



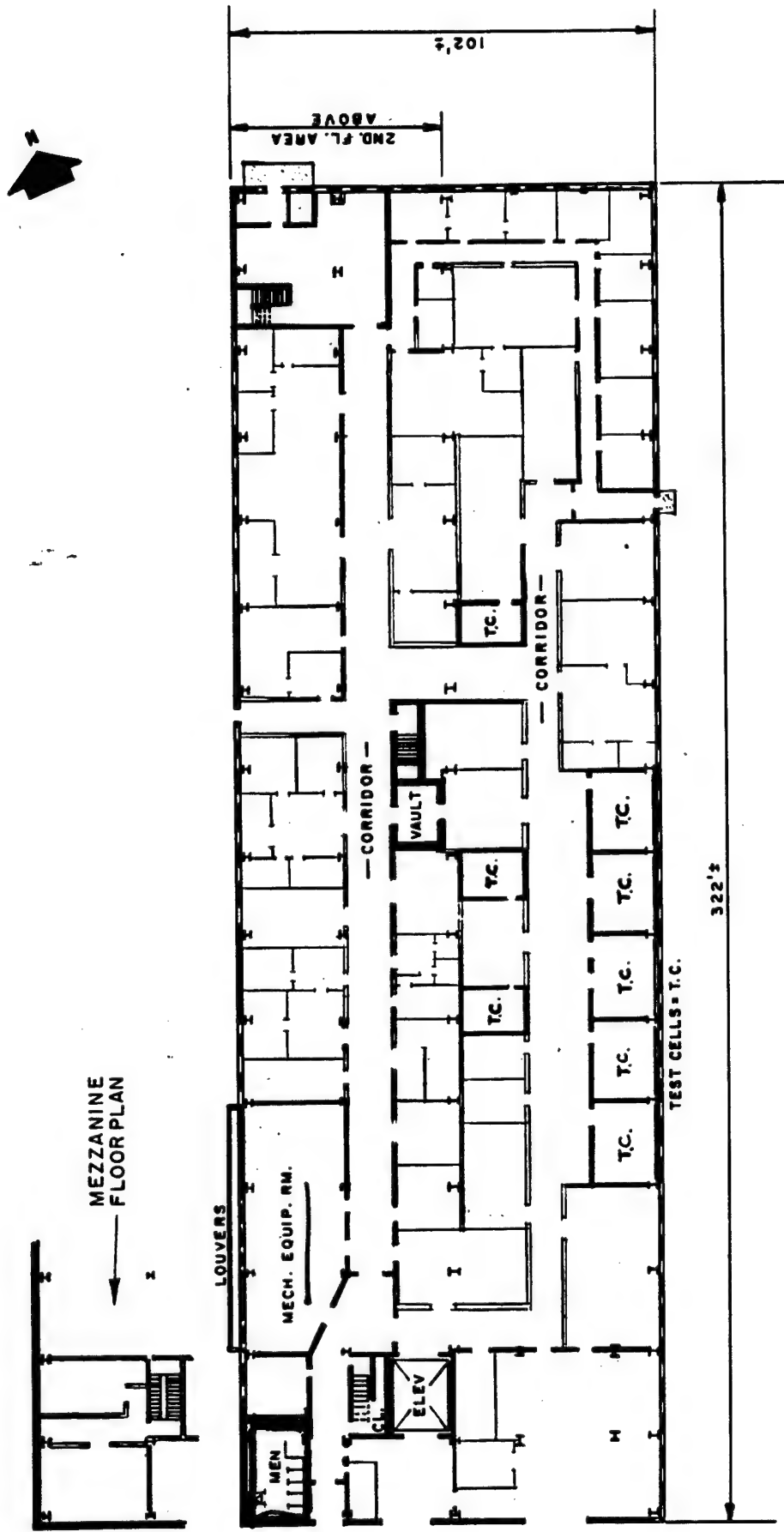
FIRST FLOOR PLAN
SCALE 1"=40'-0"



SECTION C-C
SCALE 1"=40'-0"

SEE SPECIFICATIONS

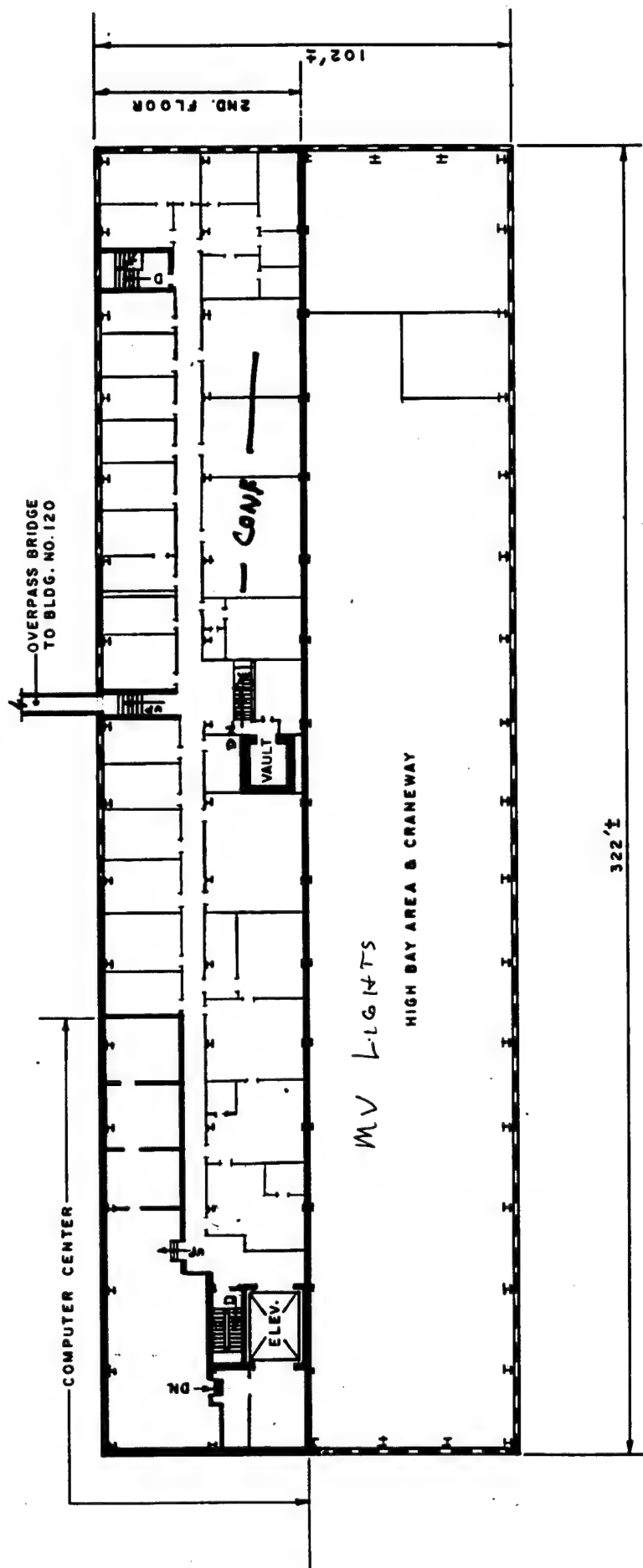
BUILDING NO. 110
FLOOR PLAN - SOUTH HALF



32,500
 15,500
 58,000 FT²

WATERVLIIET ARSENAL			
WATERVLIIET, N.Y.			
DRAWN BY: E. LANSBURG	APPROVED BY:	REV.	DATE
		EL	2/76
FIRST FLOOR		TR	4/76
MAGGS RESEARCH BUILDING NO.			
SCALE: 1" = 40'-0" DATE			

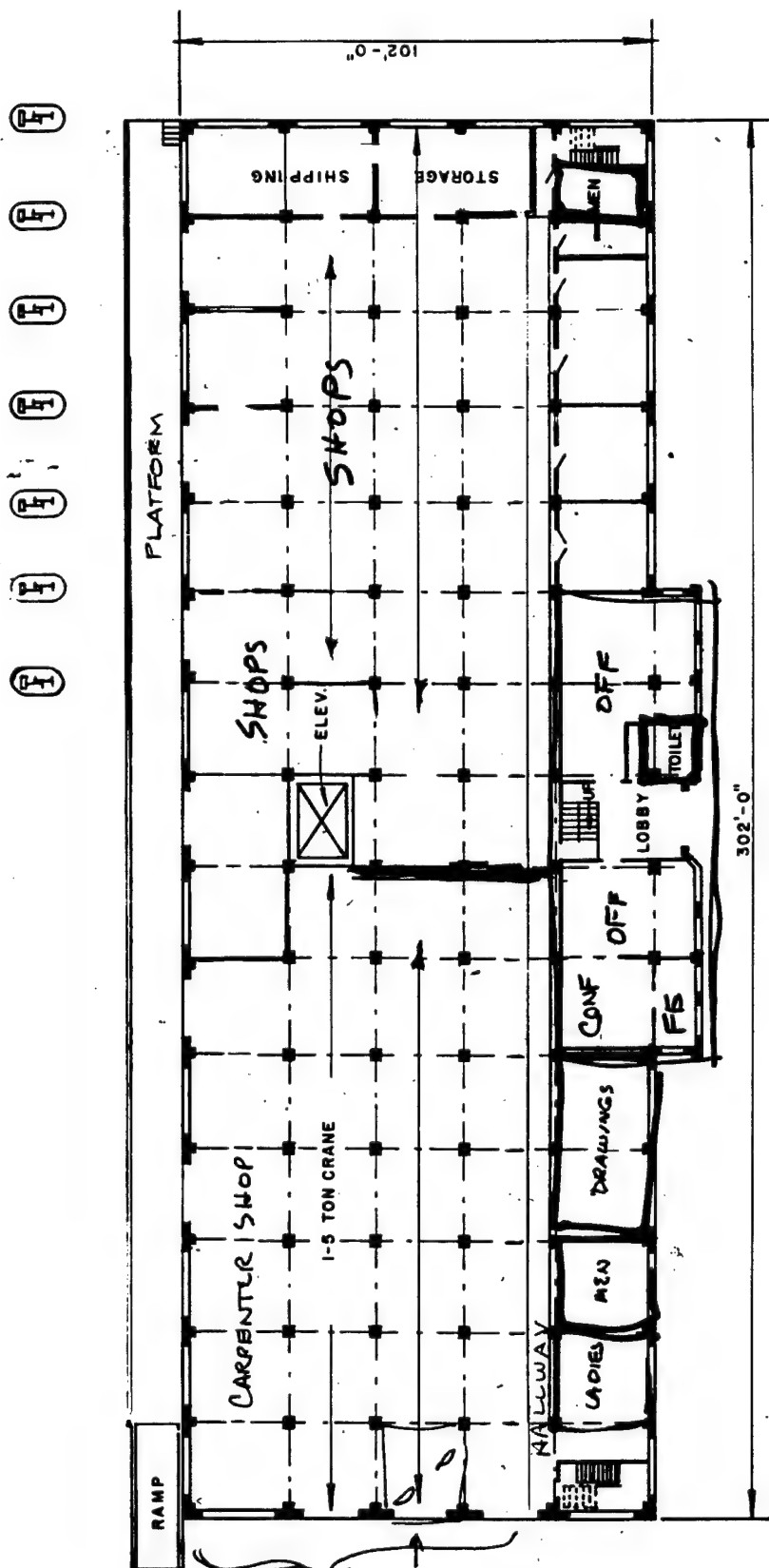
NET FLOOR AREA
 32,500
 SQUARE FEET
 FLOOR CAPACITY
 1,000 LBS / SQ. FT.



40

WATERVLIET ARSENAL			
WATERVLIET, N.Y.			
DRAWN BY: E. LANSBURG	APPROD. BY:	REVISIONS	DATE
SECOND FLOOR PLAN		EL	2/76
MAGGS RESEARCH CENTER			
BUILDING NO. 115			

NET FLOOR AREA
15,500 SQ. FT.
FLOOR CAPACITY
300 LBS./SQ. FT.



7F90T17

2 FIXTURES

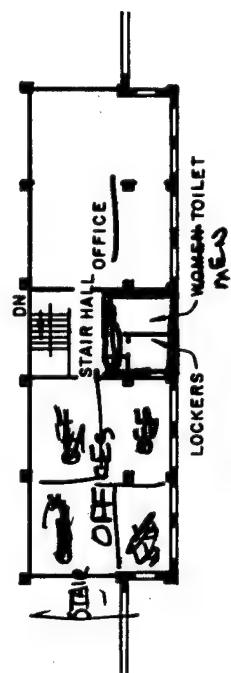
PER SQUARE

TOTAL

7412

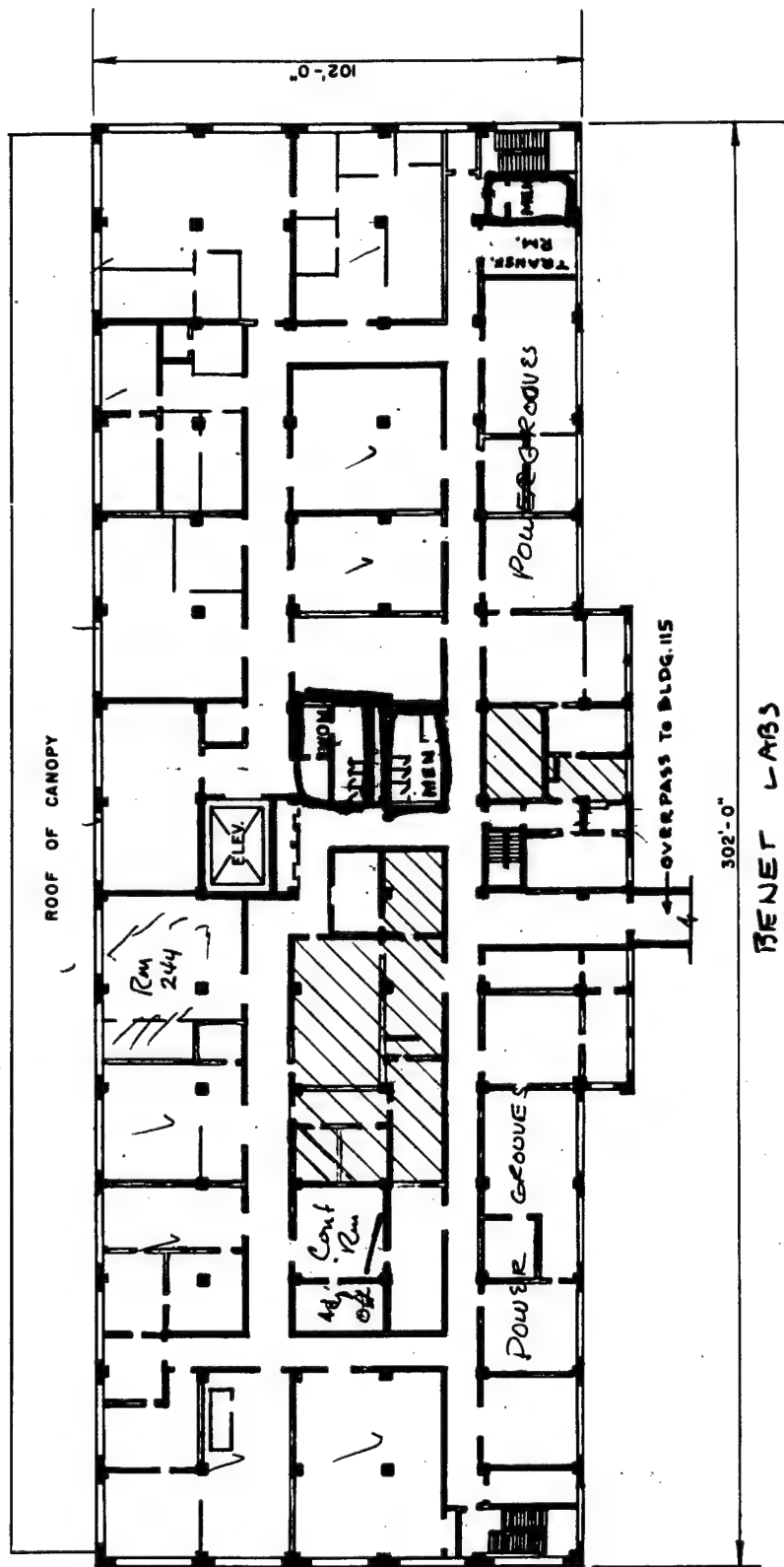
F1XTUREs

BUILT 1941



NET FLOOR AREA
31,000
SQUARE FEET
(FIRST FLOOR.)
FLOOR CAPACITY
1000 LBS
PER SQUARE FOOT
(FIRST FLOOR.)

NET FLOOR AREA
2,965
Square feet
(MEZZANINE FL.)
FLOOR CAPACITY
400 LBS



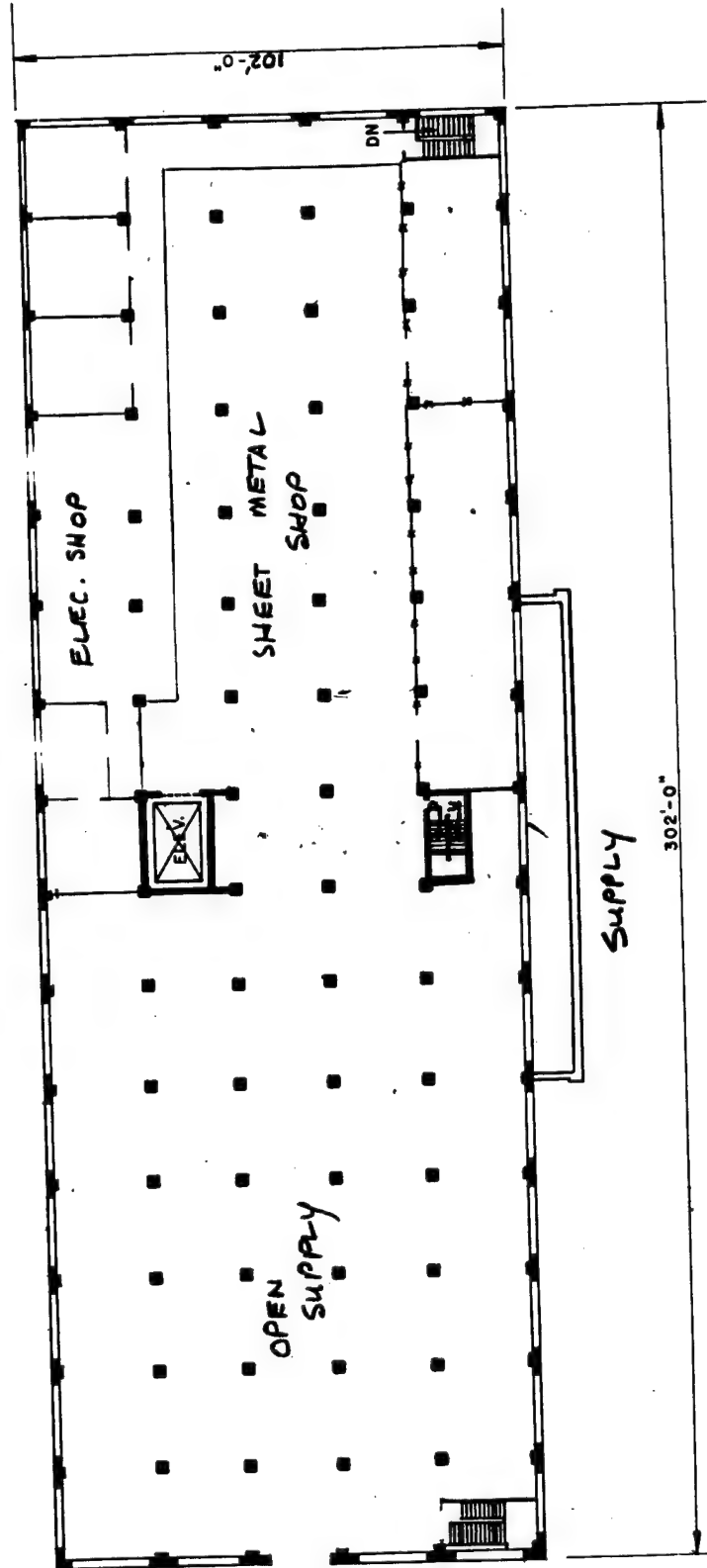
BENET LABS

R & E LABS

WATERVLIET ARSENAL WATERVLIET, N.Y.	
Drawn by: J.R. GANEM, A.E.	App'd by: <i>[Signature]</i>
Revisions	Date
SECOND FLOOR R & E LABS BUILDING NO. 120	
Scale: 1" = 40'-0"	Date:

NET FLOOR AREA
31,000
Square feet

FLOOR CAPACITY
400 LBS
Per square foot



WATERVLIET ARSENAL

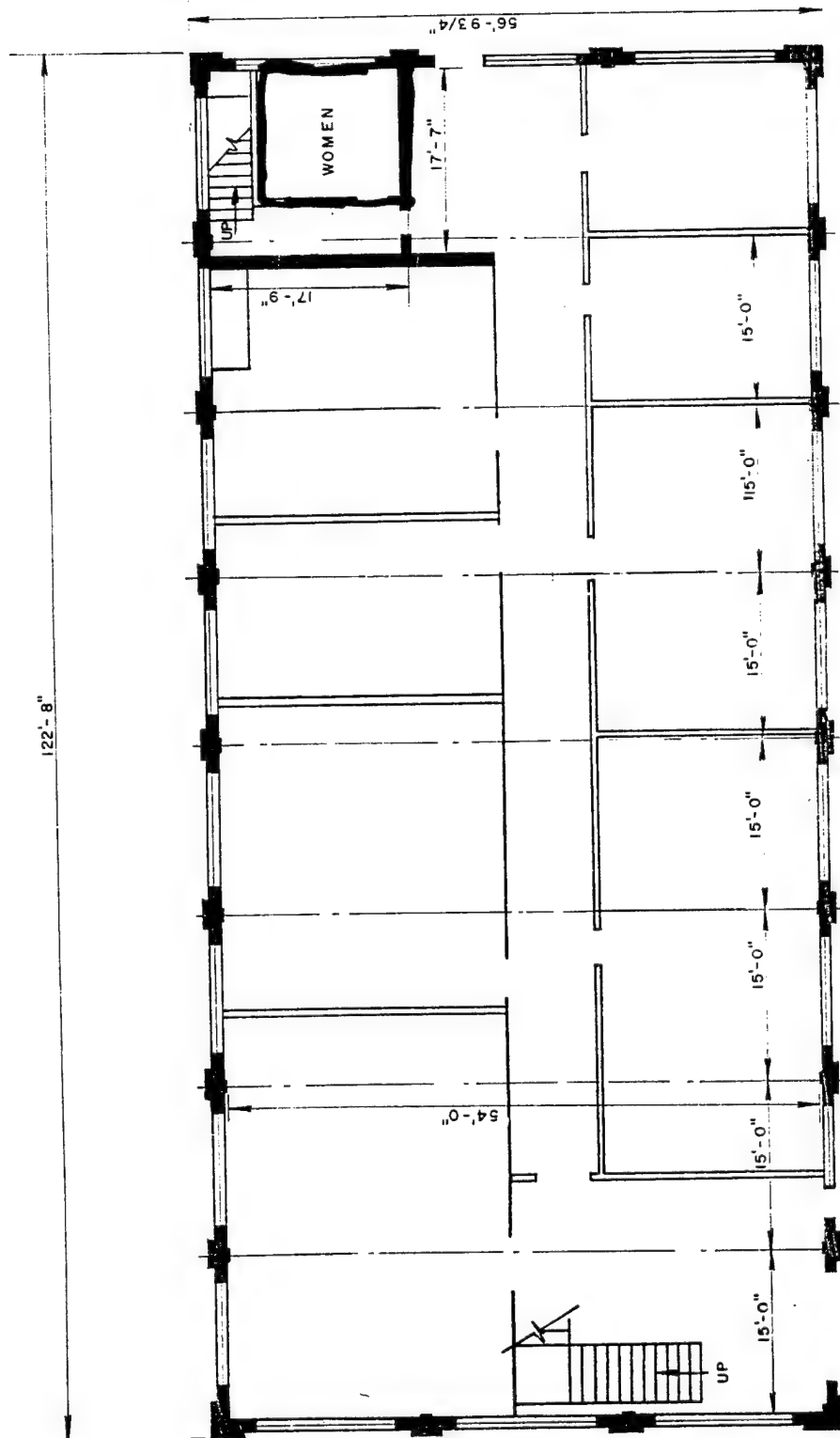
WATERVLIET, N.Y.
 Drawn by: J.R. GANGEMI
 App'd by: J.R. GANGEMI
 Revisions: _____
 Date: _____

THIRD FLOOR
 SUPPLY BUILDING
 BUILDING NO. 120

Scale: 1" = 40'-0" Date: _____



NET FLOOR AREA
 30,000
 Square feet
 FLOOR CAPACITY
 400 LBS



WATERVLIET ARSENAL

WATERVILLE, N.Y.

Donc, pour l'IR CANGEMI AF, Apud, by

Revisions

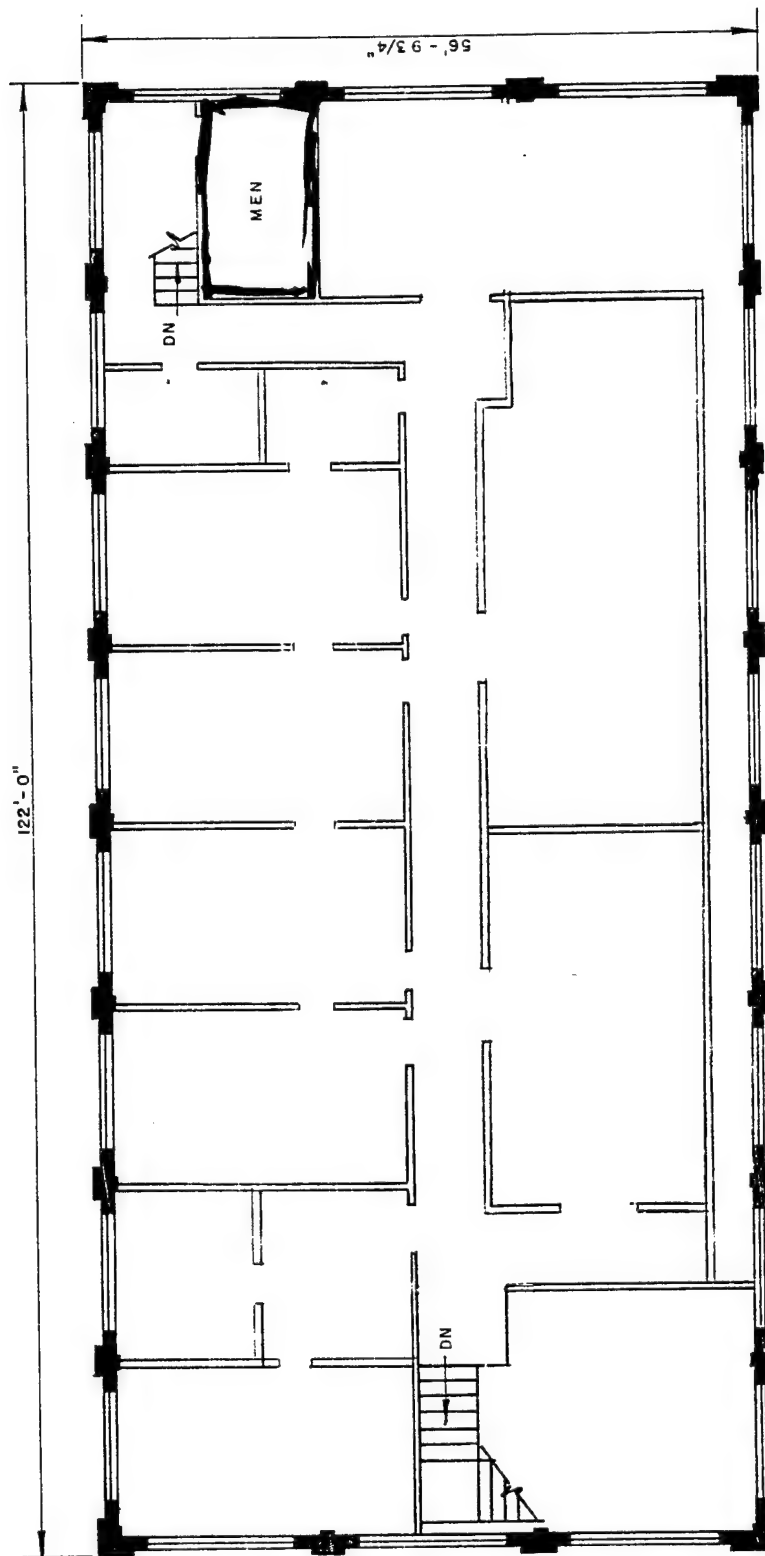
Date _____

MAIN FLOOR PLAN
RESEARCH & ENGINEERING
LAB. BUILDING
BUILDING NO. 124

Scale 1/16" = 1'-0" Date:

NET FLOOR AREA
6,900
Square feet

FLOOR CAPACITY
1000 LBS & 40 LBS
Per square foot

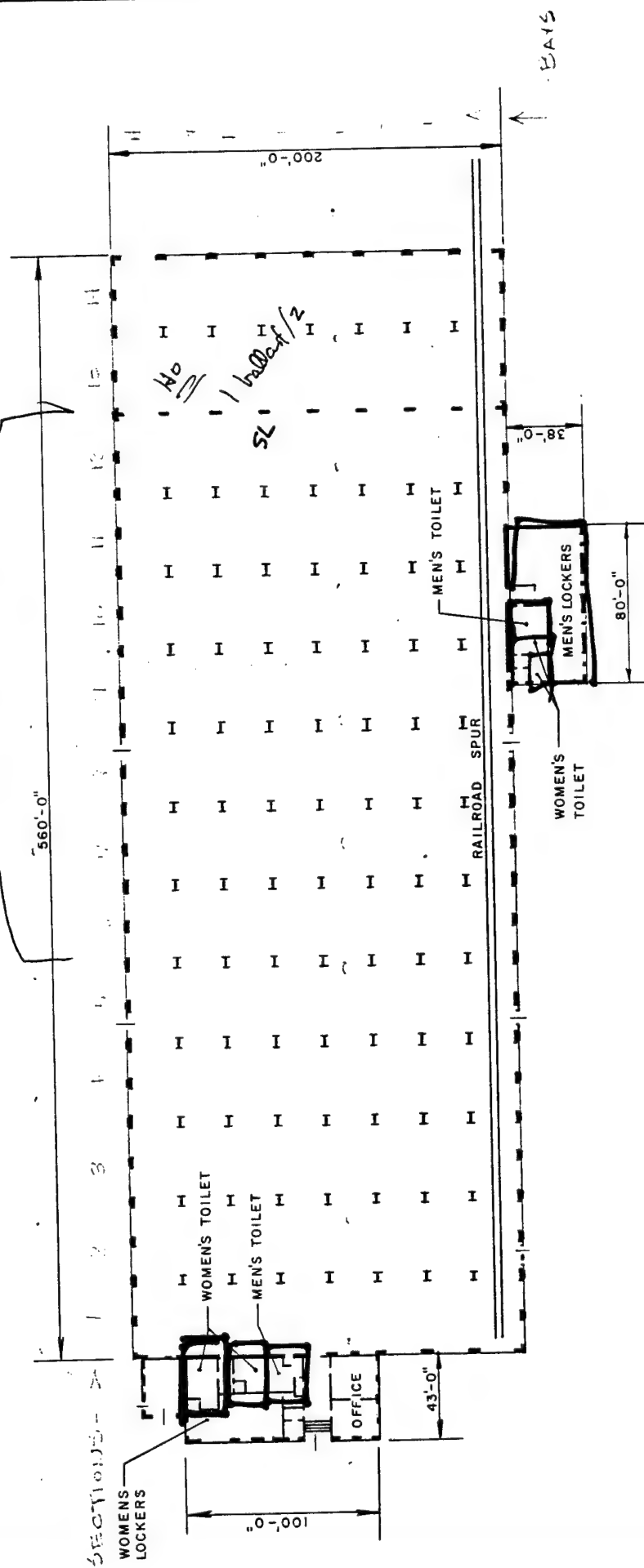


WATERVLIT ARSENAL	
WATERVLIT, N.Y.	
Drawn by: J.R. GANGEML, A.E.	App'd by: <i>J.R. Gange</i>
Revisions	Date
SECOND FLOOR PLAN	
RESEARCH & ENGINEERING	
LAB BUILDING	
BUILDING NO. 124	
Scale: 1/16" = 1'-0" Date:	

NET FLOOR AREA
6,900
Square feet

FLOOR CAPACITY
40 LBS
Per square foot

Replacing w/ Floor



WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANGLI, A.E. App'd by: J.C. Ketchum

Revisions

Date

MAIN FLOOR
BREECH PILOT
LINE BUILDING
BUILDING NO. 125

Scale: 1" = 80'-0" Date:

NET FLOOR AREA
118,921
Square feet
FLOOR CAPACITY
1000 LBS
Per square foot



Scale: 1" = 30'-0" Date:

55

BLDG # 135

BUILDING NO. 135

PLAN AT BLDGS # 135 & 136

HIGH BAY SECTION

MEZZANINE AREA 2

MEZZANINE AREA 1

PARKED

ROAD



SUBMITTED BY:

POST ENGINEER
WATERVLIET ARSENAL

DATE

WATERVLIET ARSENAL

WATERVLIET, NEW YORK

DETAIL SITE PLAN - BUILDINGS NO 135 & 136

LINE ITEM: PR

FILE NO:

-35

SHEET OF

R.R. SIDING

R.R. LOADING DOCK

WOMEN
MEN
OFFICE
HEATER ROOM

TRUCK LOADING DOCK

440'

16'

260'

12'

WATERVLIET ARSENAL

WATERVLIET, NY

Drawn by: J.R. GANGE, A.E. Appd by: *[Signature]* Date: *[Blank]*

Revisions

Date

FLOOR PLAN
WAREHOUSE B
PROPERTY DISPOSAL
BUILDING NO. 145

Scale: 1" = 60'-0" Date: *[Blank]*

NET FLOOR AREA
113,510
Square feet

FLOOR CAPACITY
1000 LBS
Per square foot

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
Survey Date: 10/18/91

OPERATION Campbell Hall

Address Building #10

Type(s) of occupancy Admin - Headquarters

Name of person in charge of energy Barbara Carpenter Walt Lubudziwski

PHYSICAL DATA:

Building orientation Front faces East

No. of floors 3 + basement

Floor area, gross, square feet 67,790

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N ☒ S ☒ E ☒ W ☒

Figure 15-14. Building Information

Roof: Type: Flat _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	Stormer	Wooden frame with plastic
S	"	on 3rd Floor (North)
E	"	
W	"	

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None ☒ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds ☒ Drapes, open mesh ☒ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other Hot water for space heating

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: _____ people from 0730 to 1600 (hours)

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from 0730 to 1600; Saturdays — to — Sundays, holidays from — to —

• (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Avg. measured temp. = 76 F

Figure 15-14. Building Information (con't)

Source of heating energy: ☒ Steam ☒ Electric resistance ☐ Other hot water fr. steam converter

Heating plant: Bldg. 136 Rating MBH

Boiler No.

Boiler type: Watertube Elec. resist. Electrode Other

Fuel used Standby

Hot water supply °F, Return °F

Steam pressure psi

Pumps No. Total HP

Room heating units:

Type: Baseboard ☒ Convectors Fin tube

Ceiling or wall panels Unit heaters Other well insulated - T'STATS

Cooling plant:

Chillers: No. Total capacity (tons)

Type: Centrifugal Reciprocating Absorption

North end has A/C (Finance & Accounting)

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIT ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
10 -										
ADMIN	3RD FL	4	F40T12	44	176	192	8,448	11	23,232	
	3RD FL	2	F40T12	61	122	96	5,856	11	16,104	
	2ND FL	4	F40T12	50	200	192	9,600	11	26,400	
	2ND FL	2	F40T12	129	258	96	12,384	11	34,056	
	1ST FL	2	F40T12	12	24	96	1,152	11	3,168	
	1ST FL	4	F40T12	50	200	192	9,600	11	26,400	
	BASEMENT	2	F40T12	31	62	96	2,976	11	8,184	
				377	1,042		50,016		137,544	
	BASEMENT	2	F96T12	2	4	175	350	11	963	
	TOTALS			379	1,046		50,366		138,507	

SQ. FT. = 51,000
 WATTS/SQ. FT. = 1.0

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 10 DATE: 10-16-91

Notes & Comments: Building Contact: Ted Kawalcek

1st and 2nd Floor (north) is air conditioned by
a packaged, split system, VAV unit:

Manufactured by Carrier, September, 1987

Model # 50 BK-044 --- 600AA

2 compressor motors, 460V, 35.8 RLA each

15hp, 21A, indoor fan motor

Recently balanced, O.A. ~ 15 cfm/person

Operates 6am - 6pm, 5 days per week

Controlled by a 24 hr/7 day time clock

No return air fan

No bypass system

Hallway doors separating the conditioned (north).
area from the unconditioned area (south) are left
open, conditioned air is lost to the south end.

WVA is considering adding terminal reheat (electric)
coils instead of the O.A. preheat coils.

J. Green suggests installing a "Parker Bypass System"

Some rooms are too warm - add more R.A. area

WATERLOO ARSENAL CHILLER STATUS

BLD 10 ADPS 1959 HVAC
 Carrier 25 Ton Dx cooling ; Stm heat
 Honeywell electric control
 Temp - humidity

Components replaced:
 Water cooled condenser + tower 1983
 Replaced with new air cooled condenser
 Compressor - Carrier 1986
 Humidifier not operational - leaks

Back-up Unit - Carrier 5 Ton
 "Window" Type installation - Cooling only.

Recommend: replacement with Free-standing
 computer support package system similar
 to computer room Bld 25-3

Cost Data
 The 4 zone setup within this area may
 present problems with design.

Are 4 zones necessary?

Self-contained units would eliminate
 need for maintaining separate steam
 generator for summer operation.

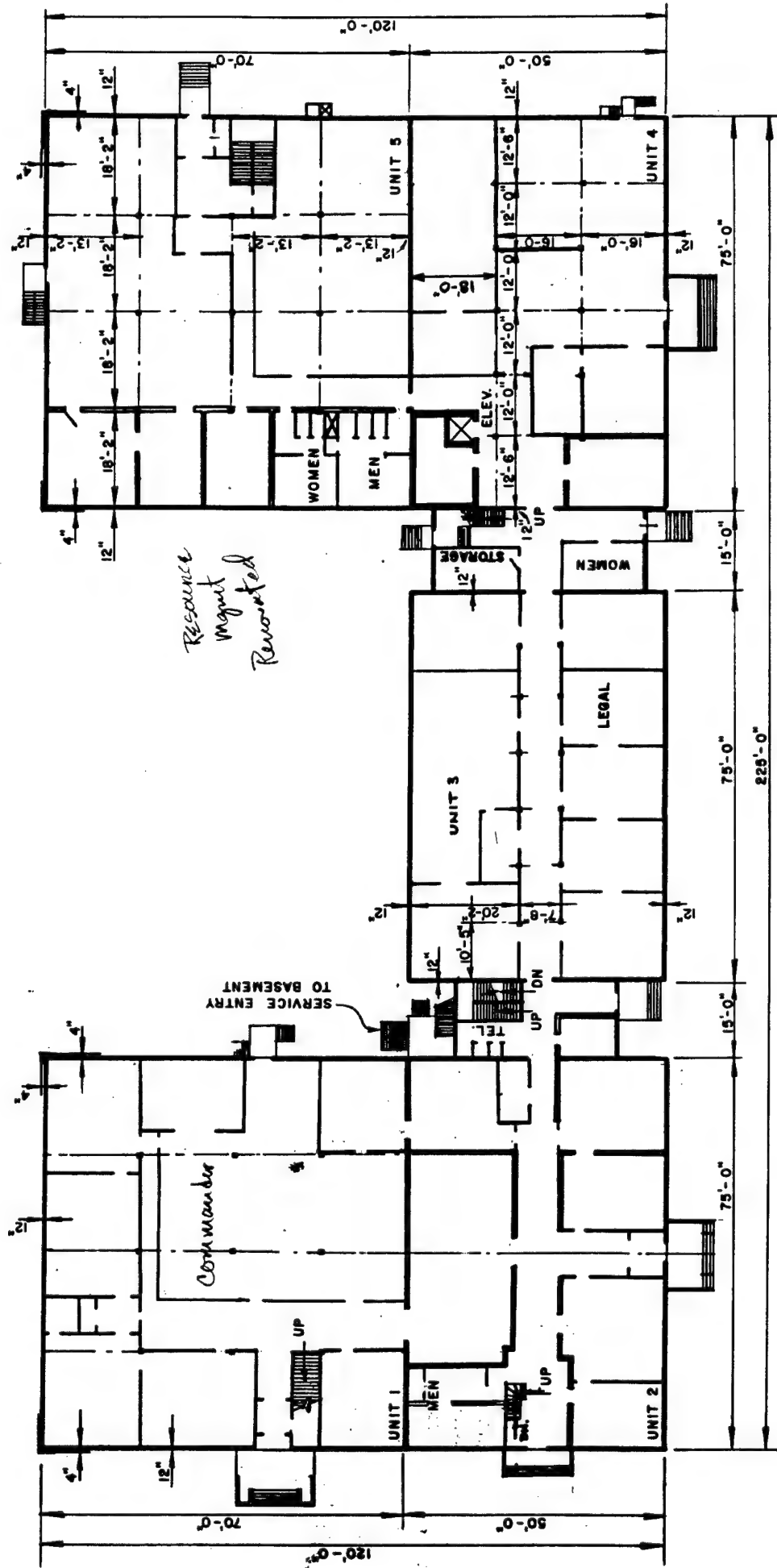
BLD 10-B Reproduction 1960 Cooling
YORK 5 Ton Dx cooling ; Elec control

Components original except condenser fan
motor - 1986

Any major failure (compressor) would
necessitate replacement of condensing
unit

Comment : Summer cooling only

BLD 10 - 2 south Computer Rm. 1983 Temp, Hum.
Liebert 5 Ton Computer support system
Dx cooling ; electric heat ; humidifier pan
Microprocessor control

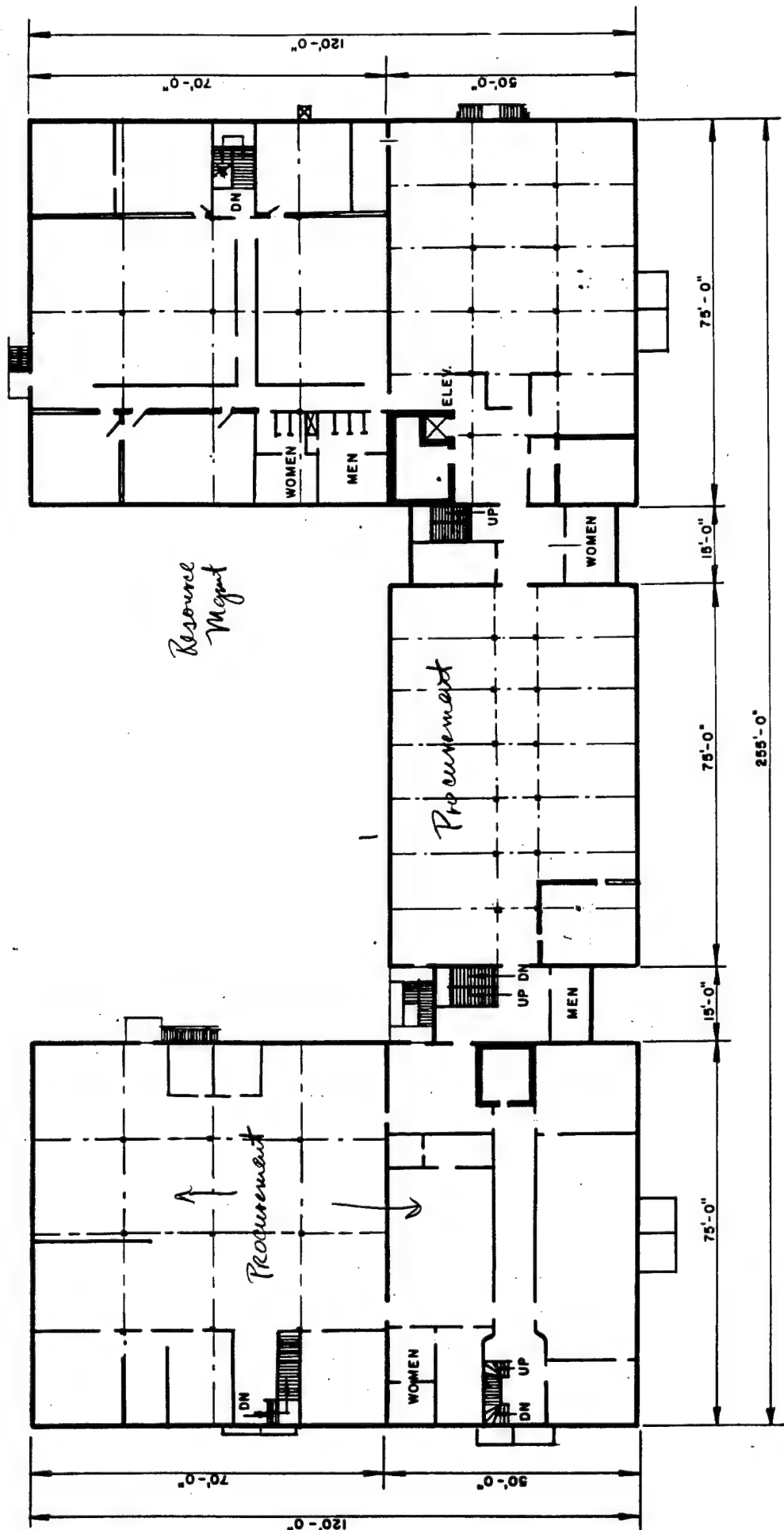


*Reconce
Might
Renovated*

WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGLI	by: <i>J.R. Gangli</i>
Revision: <i>12</i>	Date: <i>4/76</i>
FIRST FLOOR PLAN	
CAMPBELL HALL	
BUILDING NO 10	

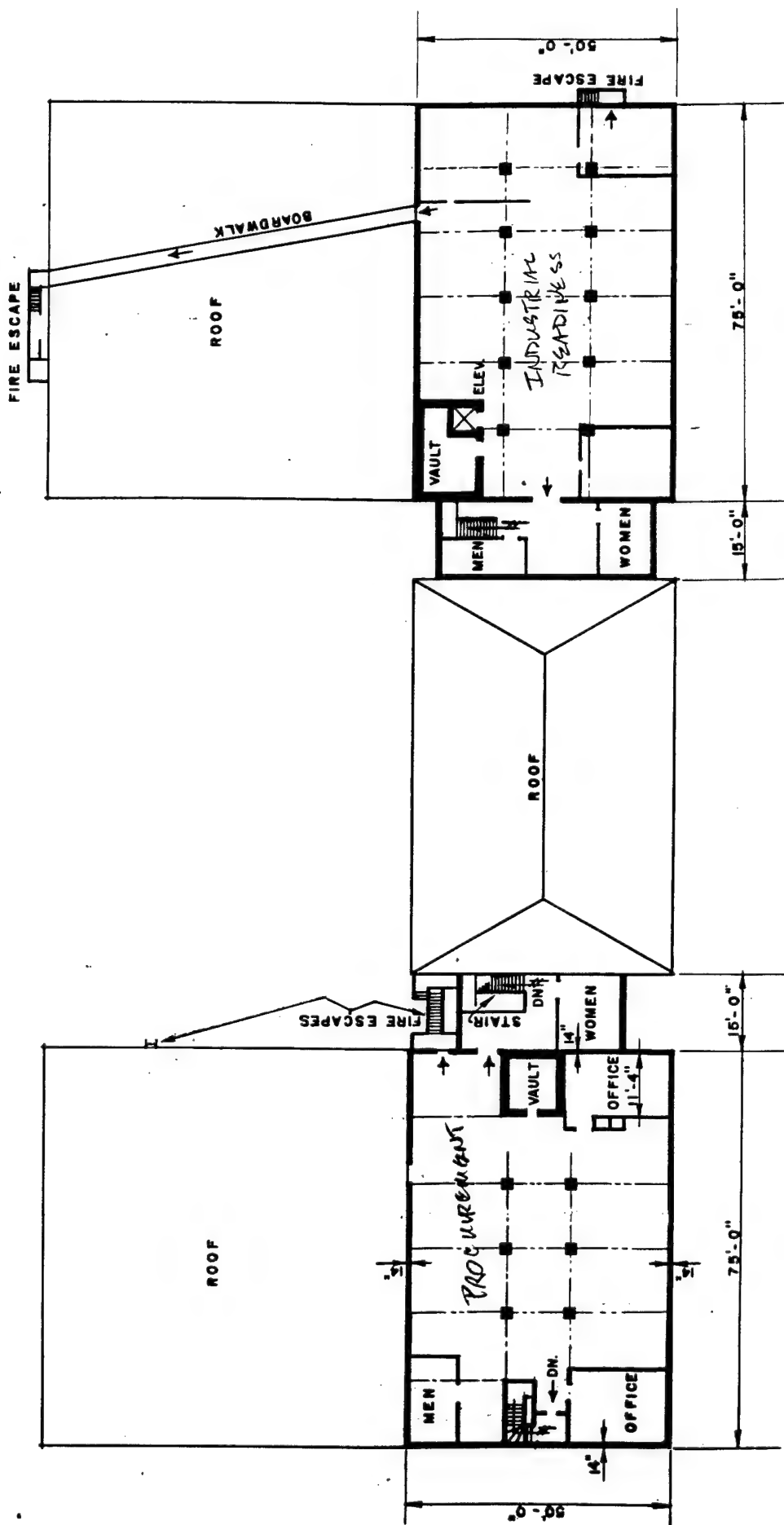
NET FLOOR AREA
24,495
Square feet
FLOOR CAPACITY

10-10



WATERVLIET ARSENAL





WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANEM, Date: 4/76

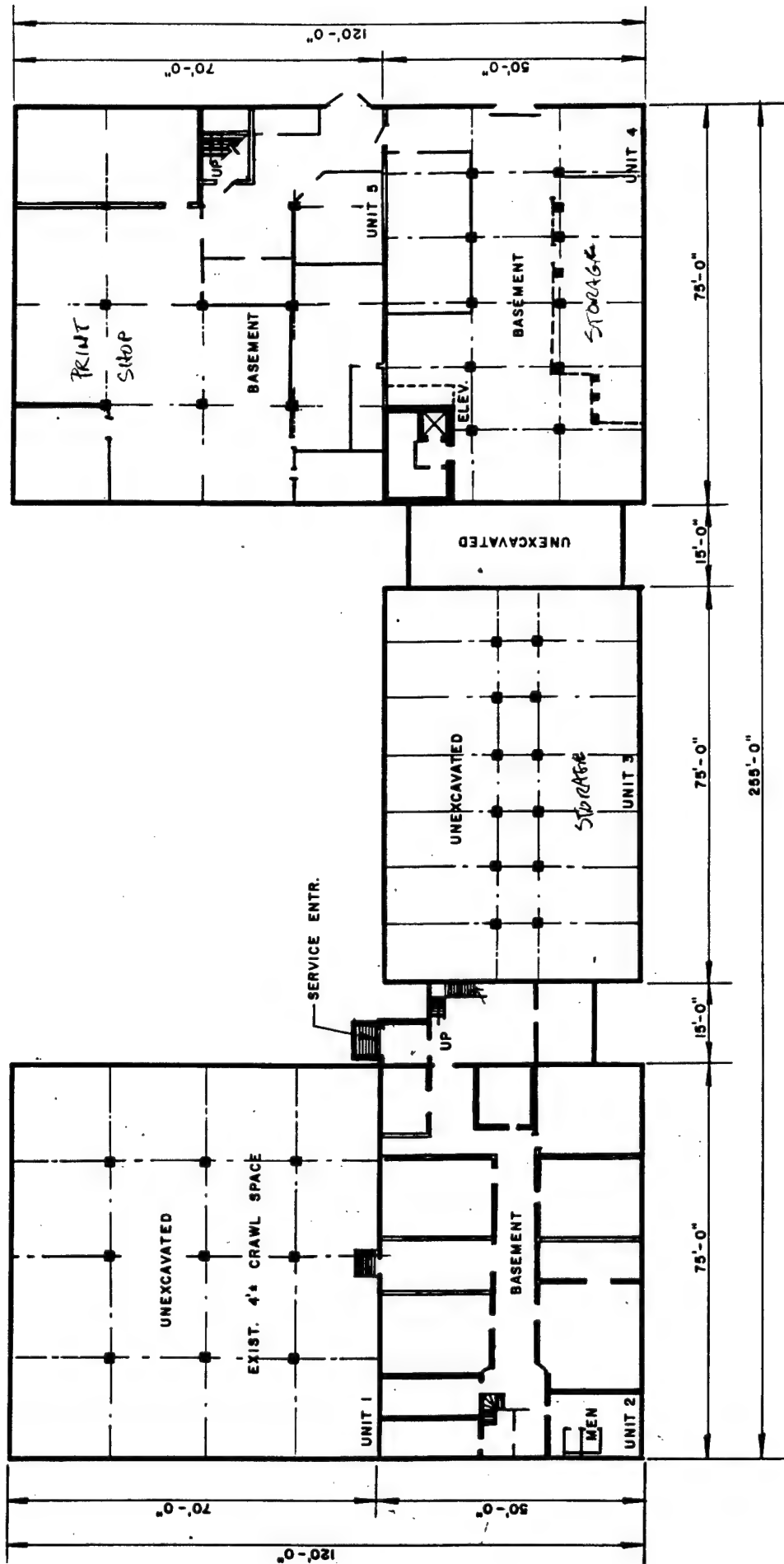
Revisions: TR

Date: 4/76

THIRD FLOOR
CAMPBELL HALL
BUILDING NO. 10

NET FLOOR AREA
8,025
Square feet

FLOOR CAPACITY:
30 LBS
PER SQUARE FOOT



WATERVLIET ARSENAL
 TERVLIET, N.Y.
 Drawn by: J.R. [Signature]
 A.E. Appd by: [Signature]

Revisions
 R

BASEMENT PLAN
CAMPBELL HALL
 BUILDING NO. 10



NET FLOOR AREA
 11,855
 Square feet
 FLOOR CAPACITY
 1000

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
 Survey Date: 10/16/71

OPERATION

Garage (Motor Pool)

Address

Bldg. #15 Transportation & Traffic Management Div

Type(s) of occupancy

Aluminum in front - motor pool in rear

Name of person in charge of energy

Art Tonjes

PHYSICAL DATA:

Building orientation

Front facade west

No. of floors

1

Floor area, gross, square feet

22,990

Net air conditioned square feet

Construction type:

Walls (masonry), curtain, frame, etc.)

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	Single	_____
S	↓	_____
E	↓	_____
W	↓	_____

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None ☒ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds ☒ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____
 Gas total energy _____
 Oil total energy _____
 Other _____ Steam from B.136 _____

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * 10 people from 0730 to 1600 (hours)
1

Saturdays:
Sundays, holidays
_____ : Saturdays _____ to _____ Sundays, holidays from _____ to _____
Hours are conditioned: Weekdays from _____ to _____

• (Account for 24 hours a day. If unoccupied, put in zero)

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind
 Night _____ °F. dB _____ mph wind
 Summer: Day _____ °F. dB _____ mph wind
 Night _____ °F. dB _____ mph wind

Winter: Day _____ °F. dB _____ %rh _____
Night _____ °F. dB _____ %rh _____

Summer: Day _____ °F. dB _____ %rh _____
Night _____ °F. dB _____ %rh _____

342

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam _____ Electric resistance _____ Other _____

Heating plant:
 Boiler No. _____ Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLLET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
15 - MOTOR POOL & TRAVEL		2	F40T12	122	244	96	11,712	11	32,208	
		2	F96T12	2	4	175	350	11	963	
	TOTALS			124	248		12,062		33,171	
			SQ. FT. =	22,865						
			WATTS/SQ. FT. =	0.5						
MOTOR POOL			SQ. FT. =	16,000			9,086		24,987	
			WATTS/SQ. FT. =	0.6						
TRAVEL			SQ. FT. =	6,100			2,976		8,184	
			WATTS/SQ. FT. =	0.5						

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 15 DATE: 10-17-91

Notes & Comments:

Split system with air cooled condenser and
Direct expansion cooling with R22

Manufactured by Carrier

Condenser model # 38 AF 007

Fan ; 1/2 hp , 1075 RPM , 3500 CFM , 1.5 FLA , 460V

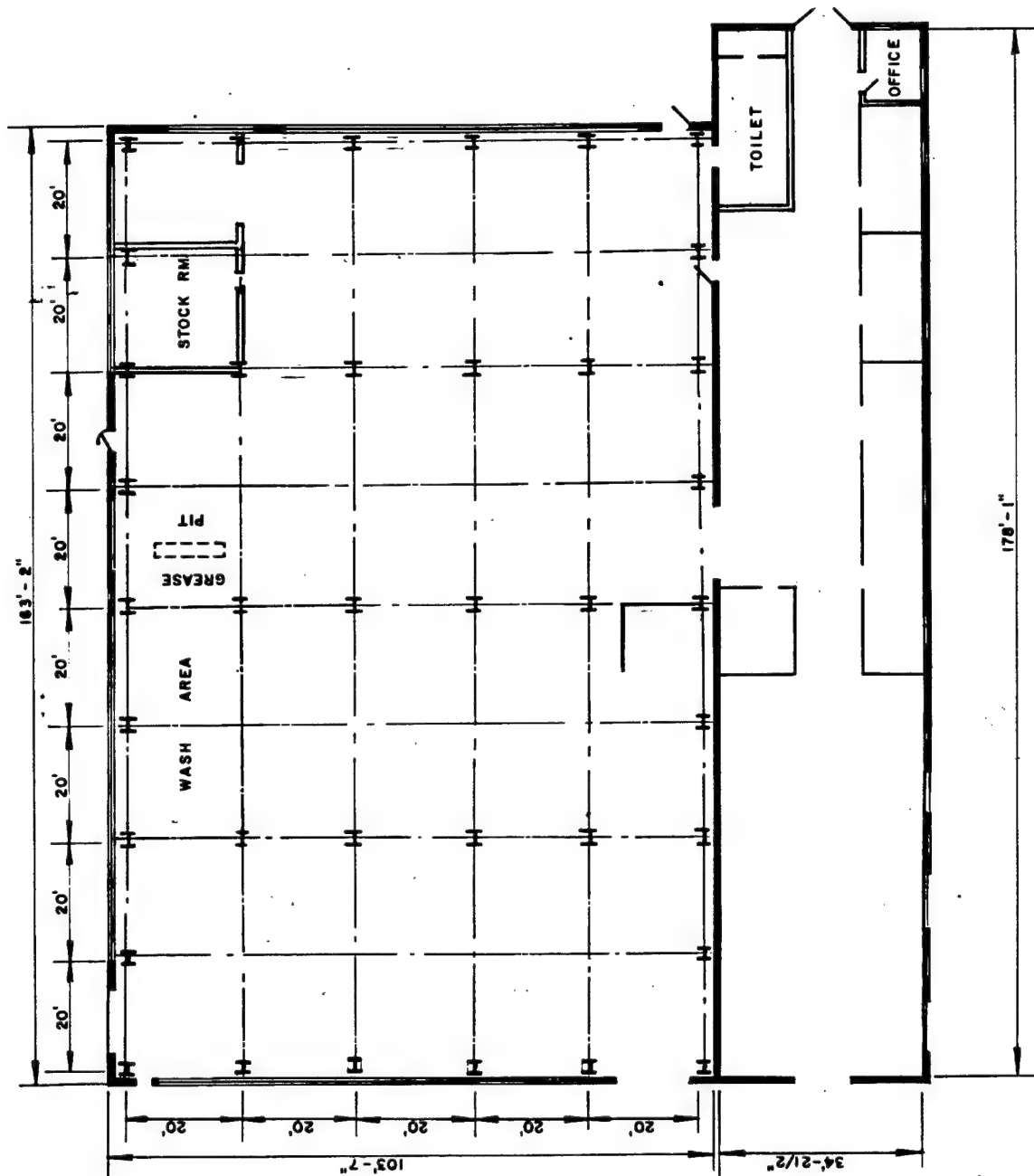
Compressor ; 12.1 RLA , 460 V , 3Ø

Evaporator / fan coil unit

Model # 40 BA 009

Fan ; 2500-4300 CFM , 468-715 RPM

Fan motor ; 1 hp , 3450 RPM



WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R.GANGEMI, A.E. and by: J.R.GANGEMI

Revisions

Date

**FLOOR PLAN
GARAGE (MOTOR)
BUILDING NO. 15**

Scale: 1" = 30'-0" Date:

NET FLOOR AREA
22,865
Square feet

FLOOR CAPACITY
1000 LBS
Per square foot

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. HutchinsSurvey Date: 10/17/91OPERATION Major Component BuildingAddress Bldg 20Type(s) of occupancy Admin / ManufacturingName of person in charge of energy Ron Barber / John Adamo

PHYSICAL DATA:

Building orientation Long dimension faces N-SNo. of floors 2 - Main floor + mezzanineFloor area, gross, square feet 107,157Net air conditioned square feet 9600

Construction type:

Walls (masonry, curtain, frame, etc.)

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat ☒ _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	_____	_____
S	_____	_____
E	_____	_____
W	_____	_____

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ _____ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None ☒ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS.

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other Steam fed convectors w/ movable doors for control

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * 20 people from 0730 to 1600 (hours) *Aluminum only*

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Saturdays:

Sundays, holidays

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh

m'd 72F Comments of unseason heating/cooling.

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam ☒ Electric resistance _____ Other _____

Heating plant:
 Boiler No. 136 Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other plus HV system

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. 110 °F

Energy Source: Gas _____, Oil _____, Electric _____, Other _____

Figure 15-14. Building Information (con't)

OTHER EQUIPMENT (Kitchen, etc.):

Equip. Description	Quantity	Size/Capacity in BTU, KW, HP, etc.
<i>Snack bar on grounds</i>	1	

11. OPERATING SCHEDULE:

OPERATION (Start-stop)

Equipment description	Weekdays	Saturday	Sunday	Holiday
Refrigeration cycle mach.				
Fans — supply				
Fans — return/exhaust				
Fans — exhaust only				
HVAC auxiliary equip.				
Lighting — interior				
— exterior				
Fan kitchen exhaust				
Elevators				
Escalators				

[illegible]

Figure 15-16. Energy Survey - Lights

LIGHTING SURVEY
WATERVLIET ARSENAL
DATES: 15 OCT 91 - 18 OCT 91
PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
20 -										
MANUFACTURING		3	F40T12	124	372	144	17,856	11	49,104	Offices, etc.
		2	F90T12	864	1,728	200	172,800	24	1,036,800	Manuf. Floor
	TOTALS			988	2,100		190,656		1,085,904	
			SQ. FT. =	105,290						
			WATTS/SQ. FT. =	1.8						
	MANUF FL		SQ. FT. =	86,400			172,800		1,036,800	
			WATTS/SQ. FT. =	2.0						
	OFFICES		SQ. FT. =	9,600			17,856		49,104	
			WATTS/SQ. FT. =	1.9						

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 20 DATE: 10-17-91

Notes & Comments: _____

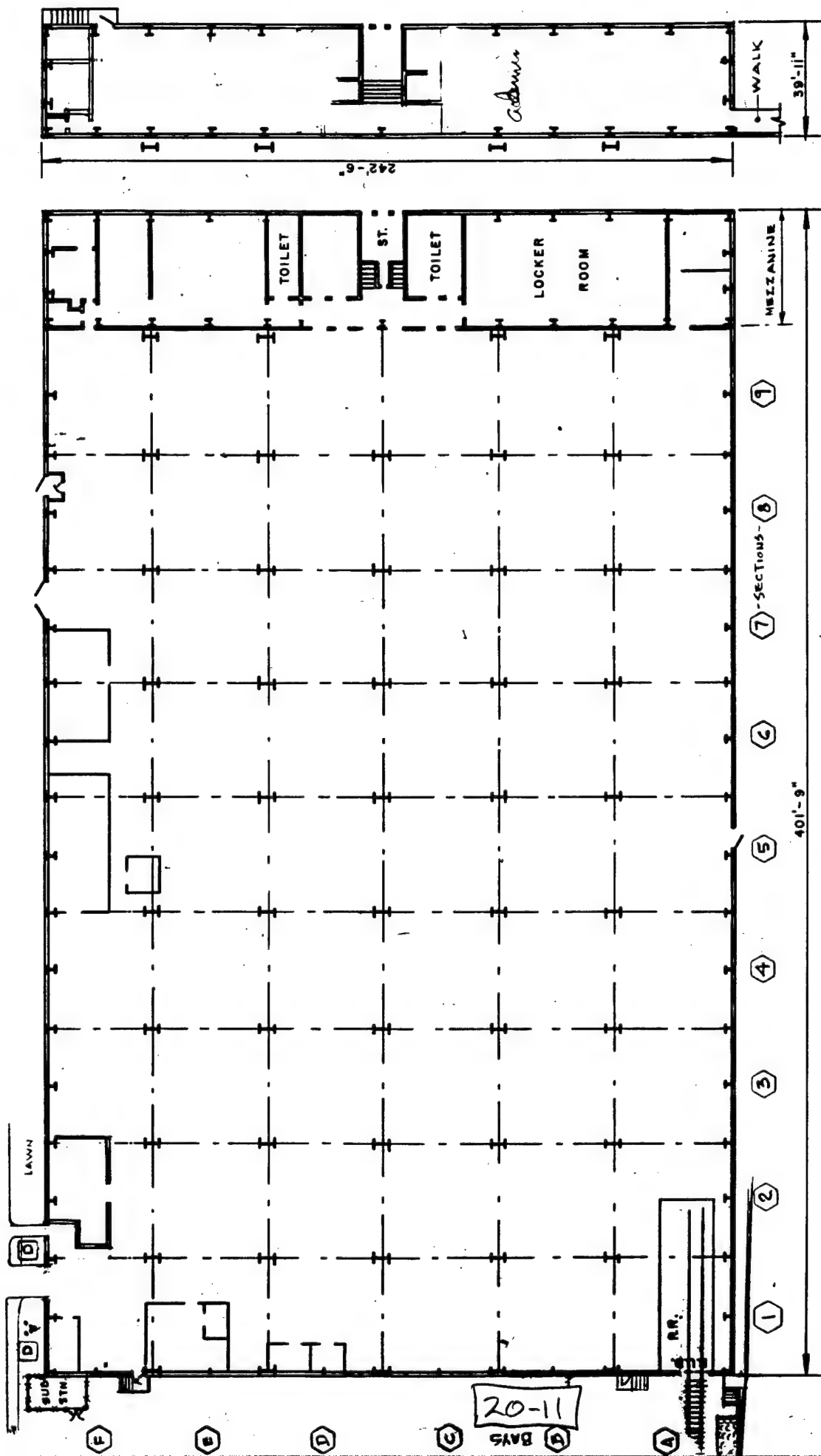
Roof top package unit

Manufactured by Trane

Air cooled condenser

BLD. 20 Mezzanine 1985 Temp control
Carrier VVT - Variable volume/temp system
30 Ton
Control - Computerized electronic

Comment : Heat system completely separate
from VVT. Consists of wall radiation with
Honeywell electric control.



FIRST FLOOR

MEZZANINE

WATERVLIET ARSENAL WATERVLIET, N.Y.

Drawn by: J.R. GANEM, AIA
Checked by: D.E. KASHNER
Revisions: _____
Date: _____

FIRST FLOOR
MEZZANINE
BUILDING NO. 20

NET FLOOR AREA
108,290
Square feet
FLOOR CAPACITY
1000 LBS - 100 LBS
Per square foot

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
 Survey Date: 10/17/91
 OPERATION O'Keefe Hall
 Address Bldg 21

Type(s) of occupancy Cafeteria and Admin
 Name of person in charge of energy Ed Van Kampen

PHYSICAL DATA:

Building orientation Front facade East
 No. of floors 1
 Floor area, gross, square feet 17,121
 Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N ☒ S ☒ E ☒ W ☒

Figure 15-14. Building Information

Roof:

Type: Flat _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	<u>Storm Windows</u>	_____
S	_____	_____
E	<u>Single</u>	_____
W	<u>Storm's</u>	_____

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None ☒ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric Elec Hot Water

Gas total energy _____

Oil total energy _____

Other Steam space heat - not on 10/17/91

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 1 people from 0300 to 0500 (hours)

2 0500

5 0600 0730

19 0730 1330

17 1330 1430

2 1430 1630

2 1630 0300

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from 1 to 1; Saturdays 1 to 1; Sundays, holidays from 1 to 1

*(Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day °F. dB mph wind Night °F. dB mph wind

Summer: Day °F. dB mph wind Night °F. dB mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day °F. dB %rh Night °F. dB %rh

Summer: Day °F. dB %rh Night °F. dB %rh

W'd 74°F

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam ☒ Electric resistance _____ Other _____

Heating plant:
 Boiler No. B. 136 Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors _____ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other Radiators - Steam

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. 80 _____ °F

Energy Source: Gas _____, Oil _____, Electric _____, Other _____

Figure 15-14. Building Information (con't)

OTHER EQUIPMENT (Kitchen, etc.):

Equip. Description	Quantity	Size/Capacity in BTU, KW, HP, etc.
<i>Elec. Grill</i>		
<i>N. Gas Oven</i>		
<i>N. Gas Stoves</i>		
<i>Ice Machine</i>		

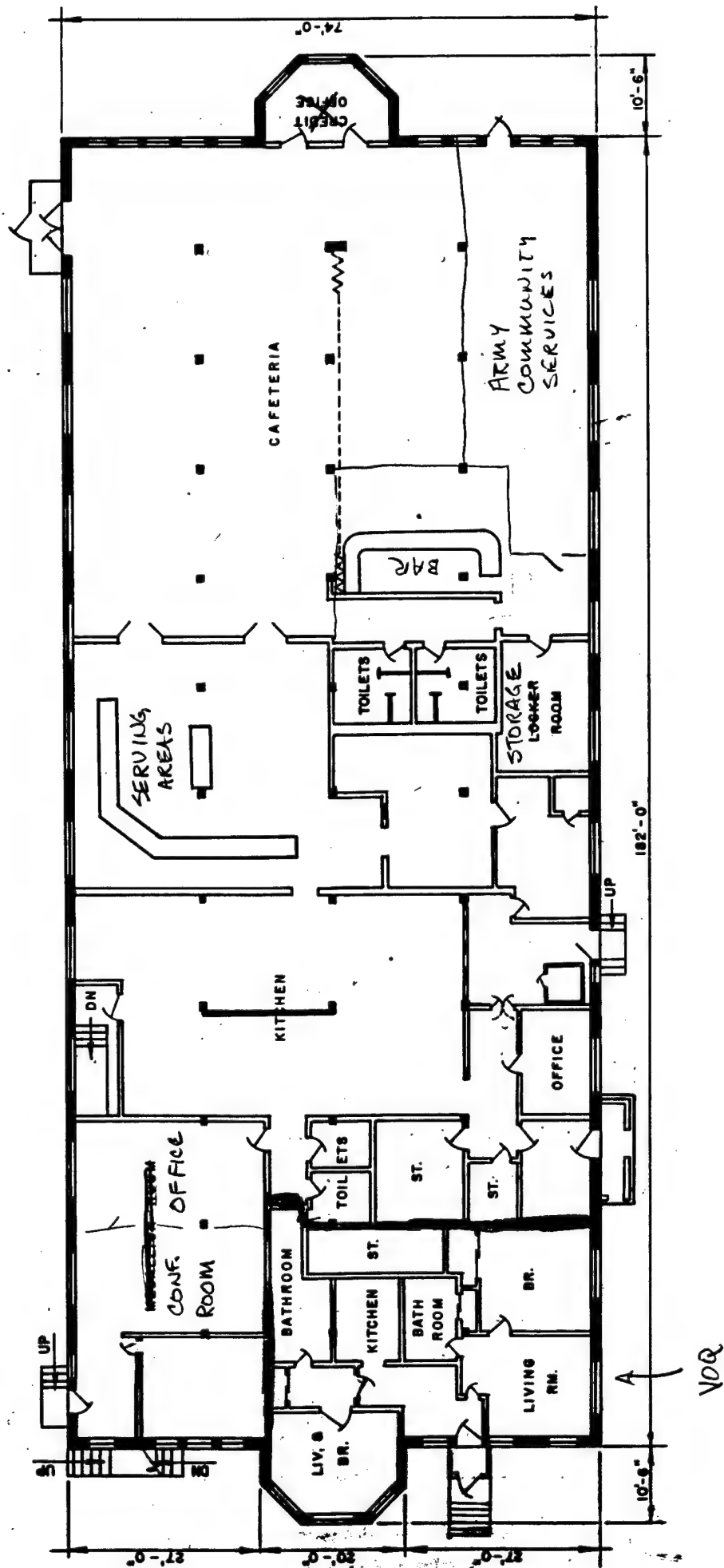
11. OPERATING SCHEDULE:

OPERATION (Start-stop)

Equipment description	Weekdays	Saturday	Sunday	Holiday
Refrigeration cycle mach.				
Fans — supply				
Fans — return/exhaust				
Fans — exhaust only				
HVAC auxiliary equip.				
Lighting — interior				
— exterior				
Fan kitchen exhaust				
Elevators				
Escalators				

LIGHTING SURVEY
 WATERVLIT ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
21 -										
CAFETERIA		2	F40T12	62	124	96	5,952	11	16,368	
	TOTALS			62	124		5,952		16,368	
			SQ. FT. =	13,580						
			WATTS/SQ. FT. =	0.4						

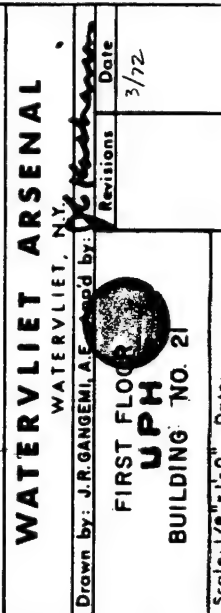


WATERVLIET ARSENAL

WATERVLIET, NY	Revisions	Date
Drawn by: J.R. GANEMAN	3/72	
MAIN FLOOR CAFETERIA & VISITING OFFICERS QUARTERS		

NET FLOOR AREA
14,990
Square Feet

FLOOR CAPACITY
1,000 - 1,200



NET FLOOR AREA
Square feet
FLOOR CAPACITY
Per square foot
11'-0" ± CLOS. HT.

WATERVLIET ARSENAL

Drawn by: J.R. GANEMI, A
 BASEMENT FLOOR PLAN
 CAFETERIA & VISITING
 OFFICERS QUARTERS

Revisions
 3/72

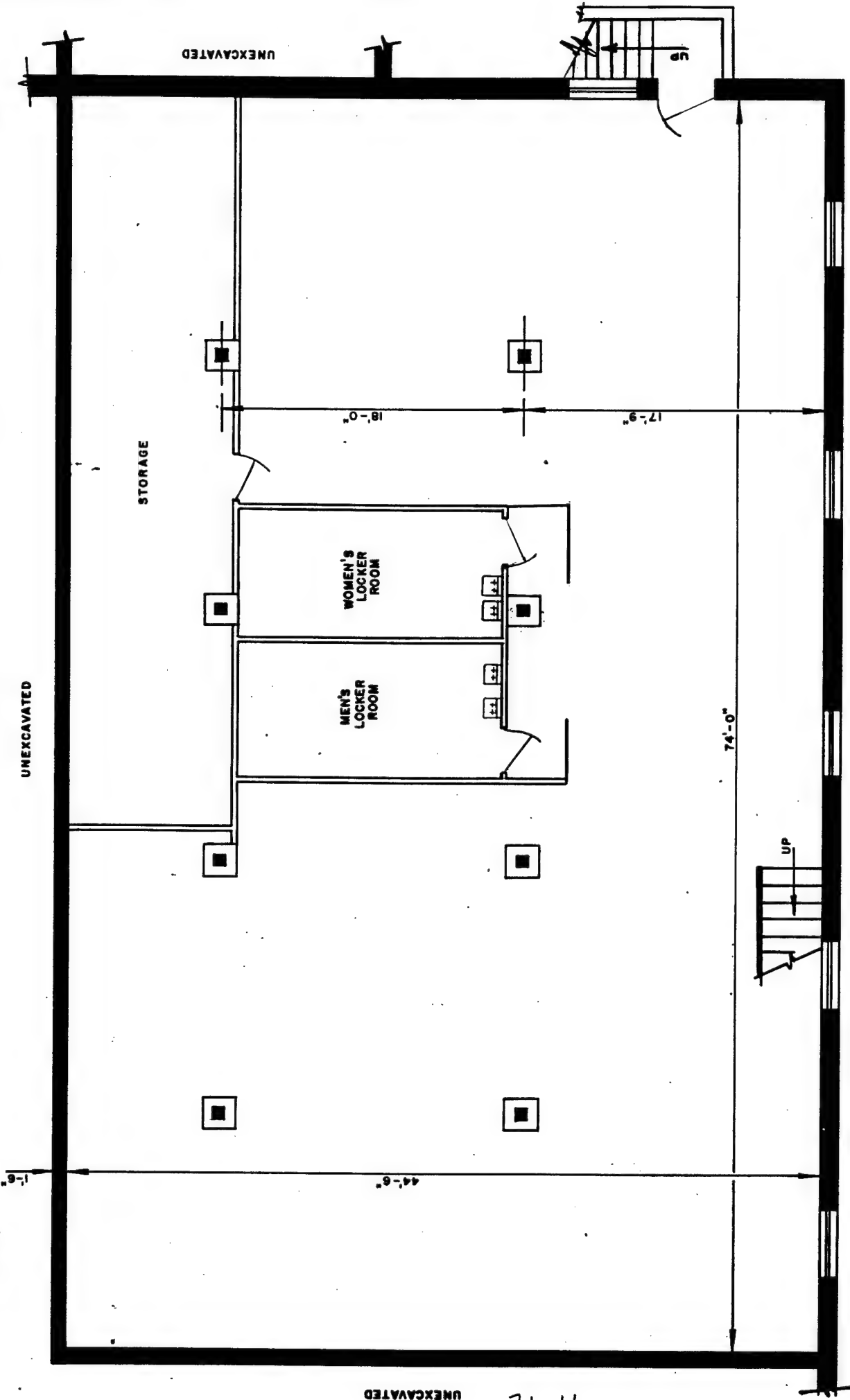
Date

N

NET FLOOR AREA

Square feet

FLOOR CAPACITY



UNEXCAVATED

21-11

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hitchman
Survey Date: 10/17/91

OPERATION Fire Station

Address Bldg 22

Type(s) of occupancy Fire Station

Name of person in charge of energy Don Strait

PHYSICAL DATA:

Building orientation Front faces East

No. of floors 1

Floor area, gross, square feet 9955

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:**Exposure**

N

S

E

W

*Type
Storms

%Glass/Exterior wall area

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS.**BUILDING TYPE:**

All electric _____

Gas total energy _____

Oil total energy _____

Other _____

Steam radiators - most off - some TSH's

- Could use exhaust hoses for vehicles during maintenance checks
- Engines run 15 min ea. morning (4)
- Currently entire room is exhausted.

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 5 people from 0000 to 2400 (hours)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Saturdays:

Sundays, holidays

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

*(Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

mid 70-76 F

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam _____ Electric resistance _____ Other _____

Heating plant:
 Boiler No. _____ Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

Ran Gore - Haz Mat for City of Jax

Condenser water used for heating _____
 Demand limiters _____
 Energy storage _____
 Heat recovery wheels _____
 Enthalpy control of supply-return-exhaust damper _____
 Recuperators _____
 Others _____

LIGHTING:

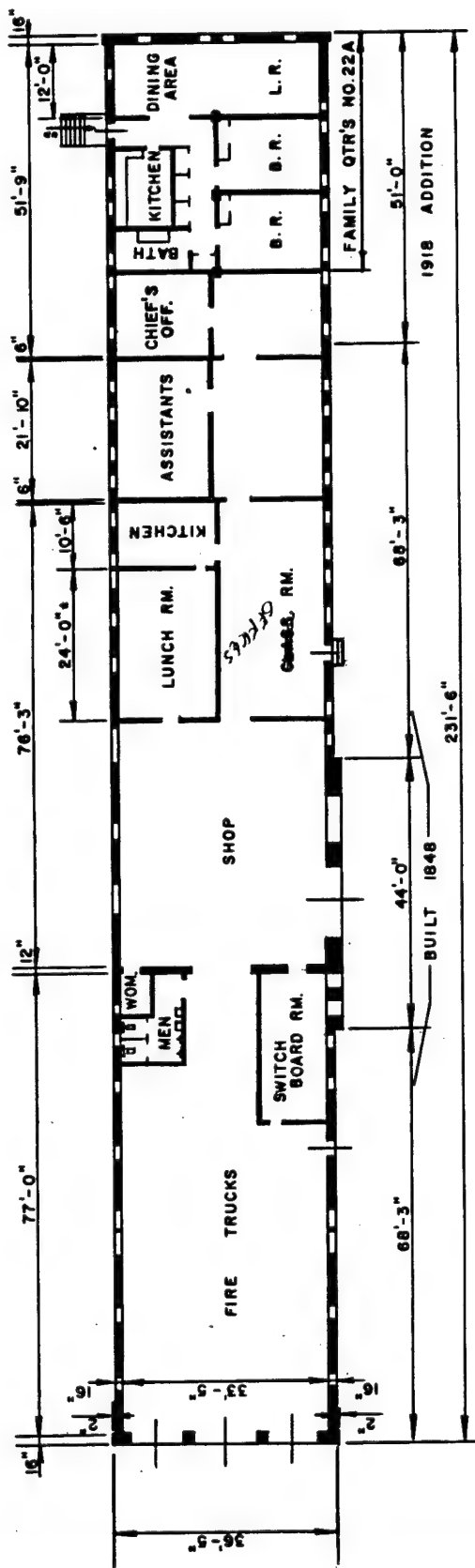
Interior lighting type: _____
 Watts/ft²: Hallway/corridor _____
 Work stations _____
 Circulation areas within work space _____
 On-off from breaker panel _____ Wall switches _____
 Control switching _____
 Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size 2-80 gal Rated input _____ Water Temp. 140 ± 150 °F
 Energy Source: Gas _____, Oil _____, Electric ☒, Other _____
HW lines uninsulated

Figure 15-14. Building Information (con't)

BASEMENT



FIRST FLOOR

WATERVLIET ARSENAL

WALTON JET. N.Y.

Drawn by: J. R. GANGEM

11. 10. 71

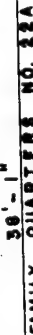
1ST FL. & BASEMENT PLANS

FIRE STATION
BUILDING NO 22

NET FLOOR AREA

**18,959 feet
Square feet**

FLOOR CAPACITY



Scale: 1/8" = 1'-0" Date:

22-8

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
 Survey Date: 10/17/91

OPERATION

Operations Office

Address

Bldg 23

Type(s) of occupancy

Basement - Supply / 1st Manuf. / 2nd Office Supply
3rd / Manuf.

Name of person in charge of energy

Don Krieder

PHYSICAL DATA:

Building orientation

Front faces East attached to B. 35

No. of floors

3 plus basement

Floor area, gross, square feet

21,527

Net air conditioned square feet

Construction type:

Walls (masonry, curtain, frame, etc.)

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof: Type: Flat ☒ Pitched _____ Color: Light _____ Dark _____

Glazing: Exposure N S E W

Exposure	Type	%Glass/Exterior wall area
N	Single	—
S	Double	—
E	Single	50%
W	Single	50%

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds ☒ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other _____ Steam 2nd FL has A/C

3rd FL - man. valve radiators Kevin Galuski

BUILDING OCCUPANCY AND USE:

A COMPENDIUM

Weekdays: Occupied by: * 2 people from 0730 to 1600 (hours) 3 away, all shifts

<u>1</u>	<u>0730</u>	<u>2400</u>	<u>1</u>
<u>1</u>	<u>0730</u>	<u>1600</u>	<u>2</u>
<u>1</u>	<u>0730</u>	<u>1600</u>	<u>3</u>

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind
Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh
Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh
Night _____ °F. dB _____ %rh

$m' \downarrow$ \uparrow
 78F 2 78F 3 70F 1 76F 13

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam _____ Electric resistance _____ Other _____

Heating plant:
 Boiler No. _____ Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

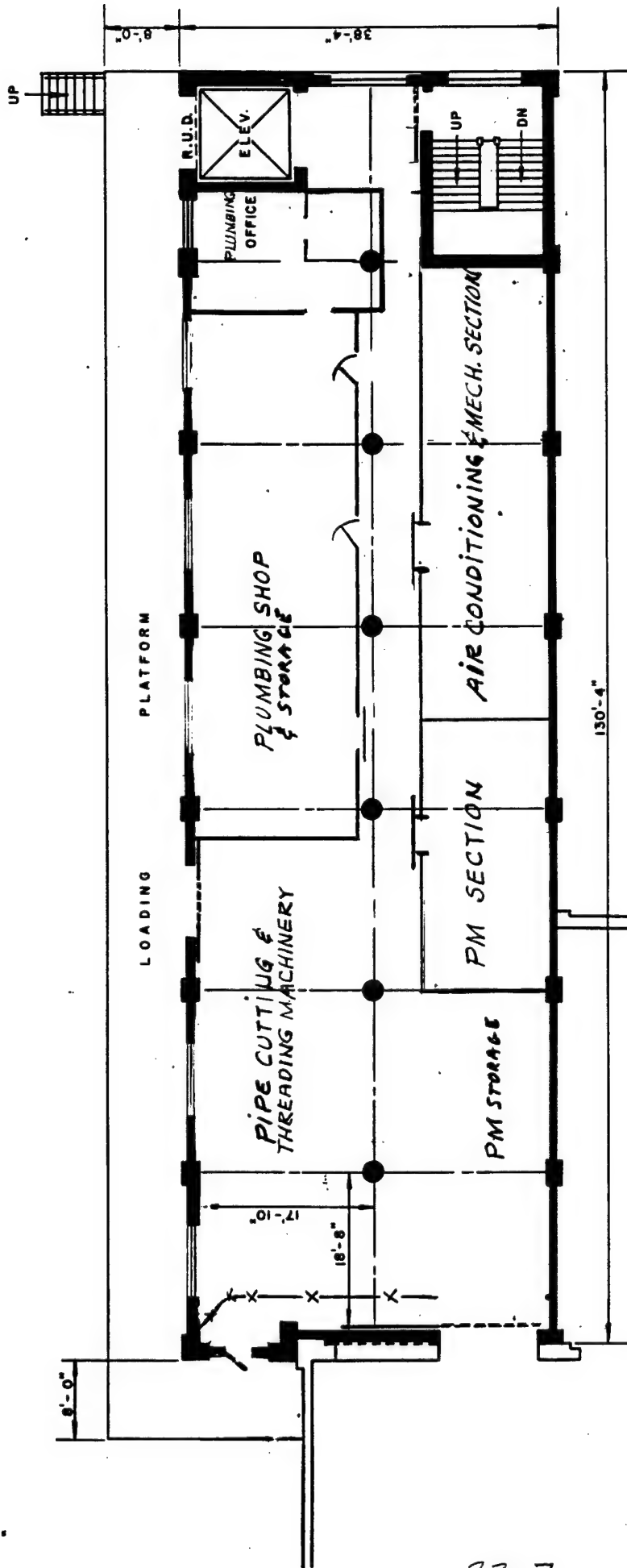
Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS

23 -										
MANUF & SUPPLY	2ND FL	2	F96T12	25	50	175	4,375	11	12,031	
	3RD FL	2	F96T12	20	40	175	3,500	11	9,625	
				=====		=====		=====		
				45	90		7,875		21,656	
	1ST FL	3	F40T12	48	144	144	6,912	17	29,376	
	BASEMENT	2	F40T12	34	68	96	3,264	11	8,976	
				=====		=====		=====		
				82	212		10,176		38,352	
TOTALS				127	302		18,051		60,008	
SQ. FT. =				19,600						
WATTS/SQ. FT. =				0.9						



WATERVLIET ARSENAL
 WATVLIET, N.Y.

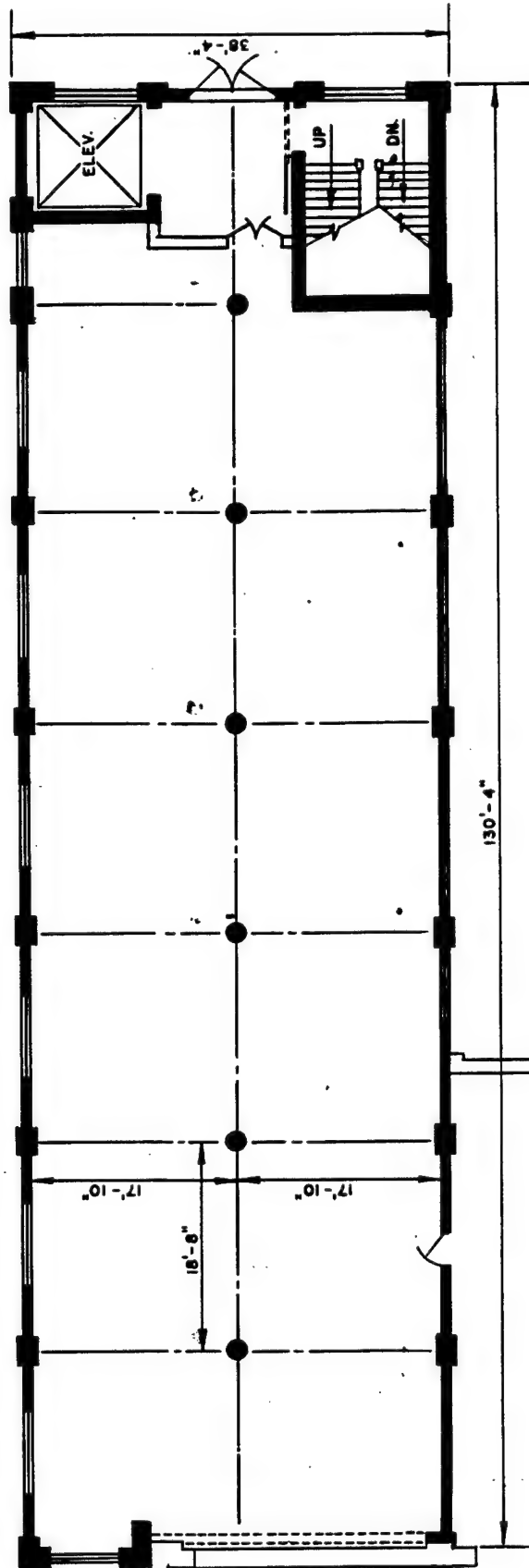
Drawn by: J.R. GANEM
 Checked by: J.C. Kesteven
 Date: _____

Revisions: _____

**FIRST FLOOR
 TOOL PROCESSING
 BUILDING #25**



NET FLOOR AREA
9,410 Square feet
FLOOR CAPACITY



BUILDING NO. 35

23-8

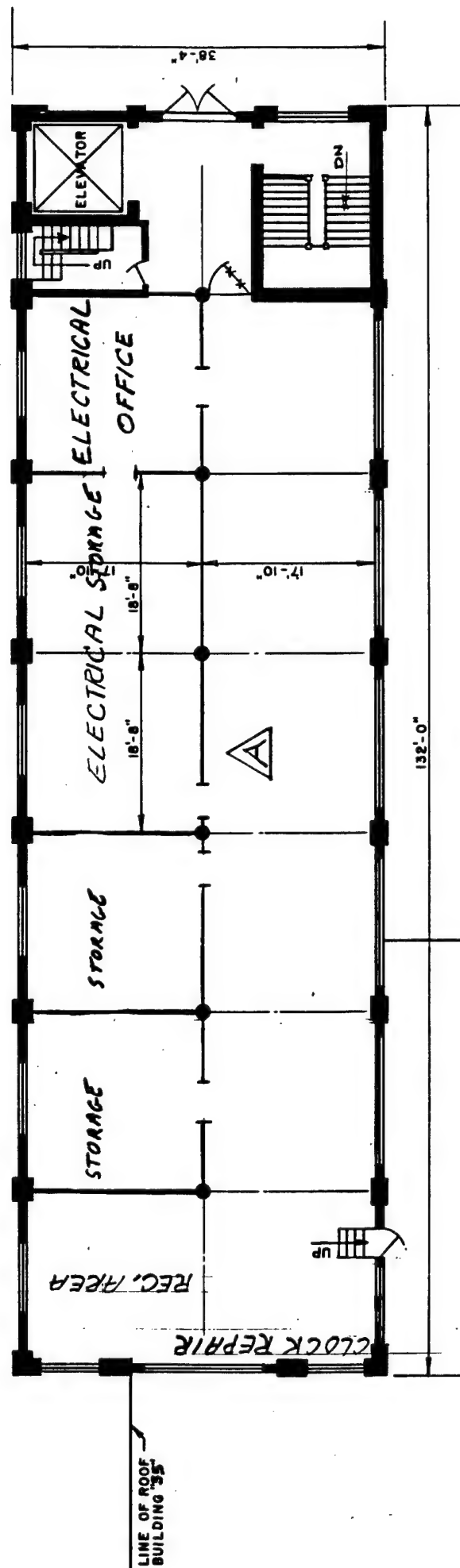
WATERVLIET ARSENAL

WATERVLIET, N.Y.

Drawn by: J.R. GANGEML
 by: J.R. GANGEML
 Revisions
 Date

SECOND FLOOR
 TOOL PROCESSING
 BUILDING

NET FLOOR AREA
 5,410
 Square feet
 FLOOR CAPACITY

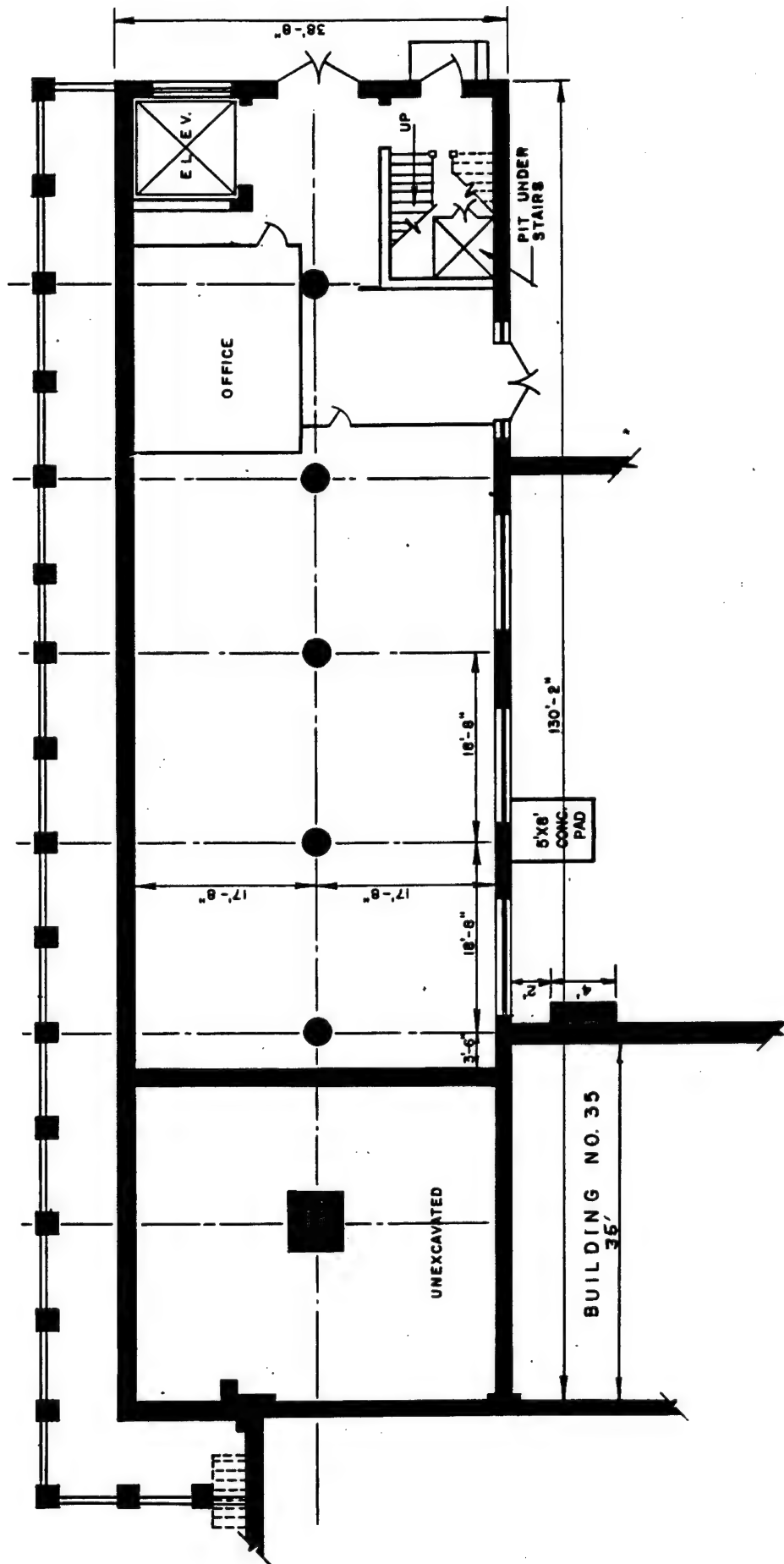


BUILDING NO. 35

LINE OF ROOF.
BUILDING "35"

WATERVLIET ARSENAL	
WA ET, N.Y.	Drawn by: J.R. GANGEMI
Id by: J.R. GANGEMI	Date: 9-78
Revisions: A	GENERAL T.F.A.
THIRD FLOOR PLAN TOOL PROCESSING BUILDING NO 23	

NET FLOOR AREA
5,410
Square feet
FLOOR CAPACITY



WATERVLIET ARSENAL	
WATERSIDE, N.Y.	
Drawn by: J.R. GANGEML	by: J. R. GANGEML
Revisions	Date
BASEMENT FLOOR OF TOOL PROCESSING BUILDING #23	



NET FLOOR AREA
3,370
Square feet

FLOOR CAPACITY

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. J. Antchun
Survey Date: 10/17/91

OPERATION Operations Office

Address Bldg 24

Type(s) of occupancy Admin

Name of person in charge of energy Don Marcello

PHYSICAL DATA:

Building orientation Front faces East

No. of floors 2 + basement

Floor area, gross, square feet 11,876

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N _____ S ☒ E ☒ W ☒

Figure 15-14. Building Information

Roof: Type: Flat _____ Color: Light _____
 Pitched ☒ Dark _____

Glazing: Exposure N _____ *Type Single _____ %Glass/Exterior wall area _____
 S _____
 E _____
 W _____

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)
 Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):
 Shades _____ Blinds ☒ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____
 Gas total energy _____
 Oil total energy _____
 Other Steam _____

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 25 people from 0730 to 1600 (hours)
2 → 2100 Jan-Apr

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____; Sundays, holidays from _____ to _____

*(Account for 24 hours a day. If unoccupied, put in zero)

24-3

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

W'd 0°F Floor

Figure 15-14. Building Information (con't)

74 1
72/78 2 North end is over heated

Radiator valve leaking - 2ND Fl hallway $\frac{1}{2}$ 1ST Fl. hallway

Source of heating energy:
 Hot water _____ Steam _____ Electric resistance _____ Other _____

Heating plant:
 Boiler No. _____ Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____ TSTAT's _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____
 A/C on 2ND Floor

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. 80 °F

Energy Source: Gas _____, Oil _____, Electric ☒, Other _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
24 - OPERATIONS		2	F40T12	57	114	96	5,472	11	15,048	
	TOTALS			57	114		5,472		15,048	
			SQ. FT. =	4,434						
			WATTS/SQ. FT. =	1.2						

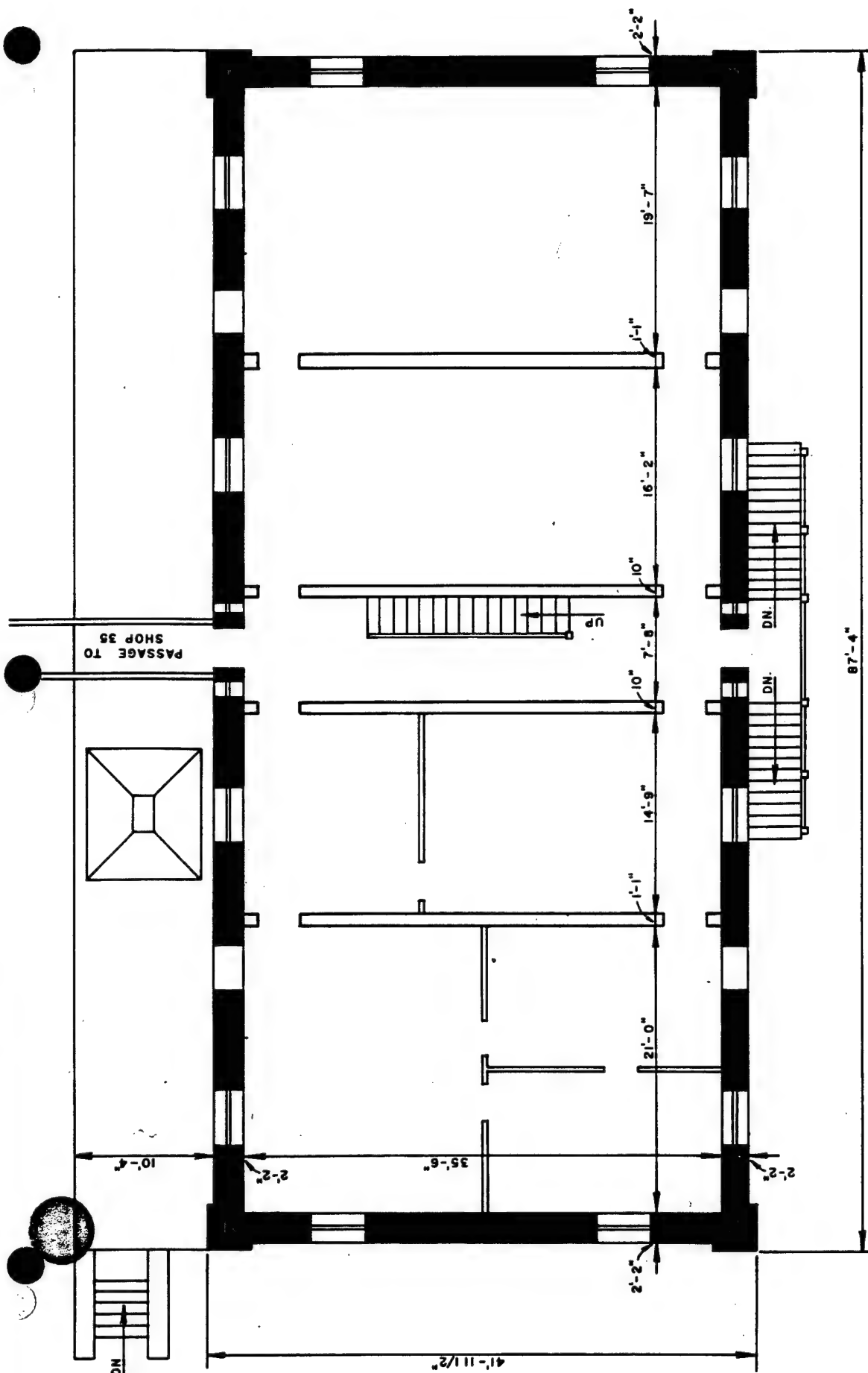
BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 24 DATE: 10-17-91

Notes & Comments:

2 Indoor single package cooling unitsServes the 2nd FloorManufactured by CarrierRoomtop model # 50 AH 060 500Supply air = 2000 cfm220 v, 3 ϕ , 7.7 kw3/4 hp fan motor1.5 hp condenser motor60,000 Btuh cooling, EER = 7.8Entering Air Temp. = 95°F db, 67°F wbGross cooling capacity = 62,800 BtuhEconomizer cycleElectric controls

LD 24 - 2 EM OFFICES 1985 Temp control
Carrier Indoor Roomtop - Two Units 5 Ton ea
Control - electric



WATERLIET ARSENAL

WATERLIET, N.Y.

Drawn by: J.R. GANGEML, A.E. App'd by: *J.R. Gange*

**FIRST FLOOR PLAN
METHODS & QUALITY
CONTROL BUILDING
BUILDING NO. 24**

Scale: 3/32" = 1'-0" Date:

NET FLOOR AREA

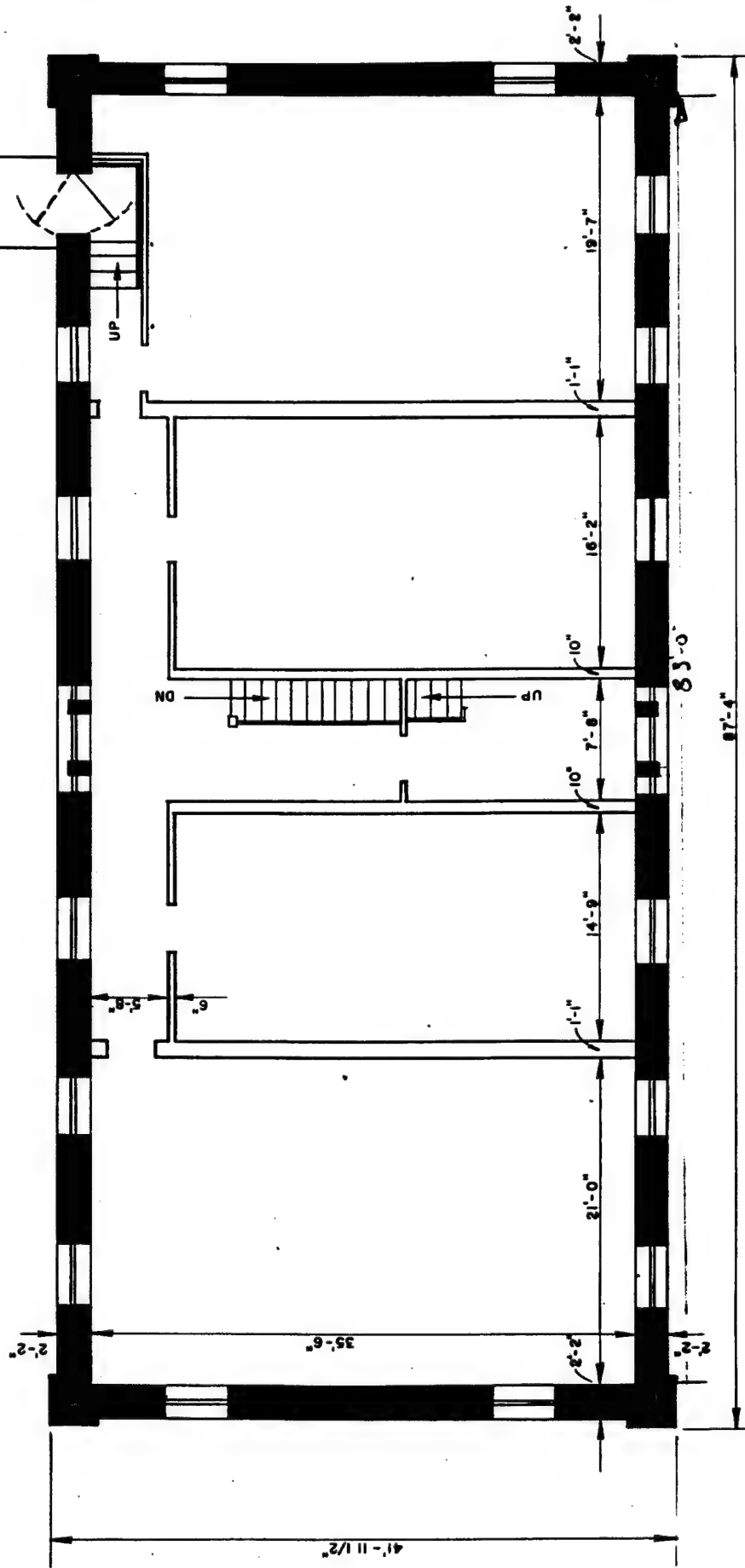
4,434

Square feet

FLOOR CAPACITY

Per square foot

24-10



WATERVLIT ARSENAL

WATERVLIT, N.Y.

Drawn by: J.R. GANGE, I.A.E. App'd by: *J.R. Gange* Date: *8/1/68*

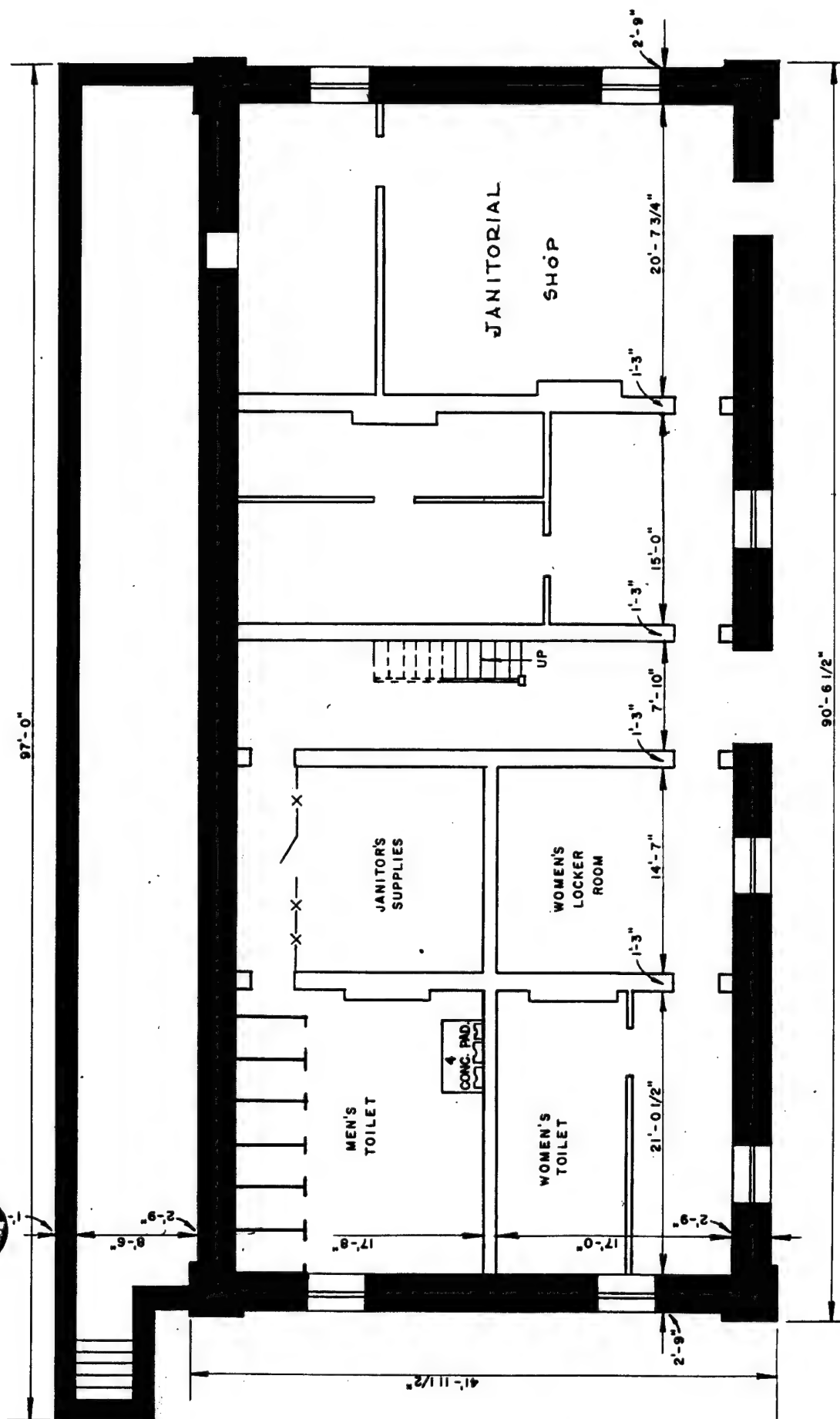
**SECOND FLOOR PLAN
METHODS & QUALITY
CONTROL BUILDING
BUILDING NO. 24**

Scale: 3/32" = 1'-0" Date:

NET FLOOR AREA
4,434
Square feet

FLOOR CAPACITY
Per square foot

24-11



24-12

NET FLOOR AREA
4,212
Square feet

FLOOR CAPACITY
1,000 LBS
Per square foot

WATERVLIET ARSENÁL

WATERVLIET, NY.

Drawn by: J. R. GANGEMI, A.E. App'd by:

BASEMENT FLOOR PLAN

METHODS & QUALITY

BUILDING NO. 24

Scale: 3/32" = 1'-0" Date:

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchinson
Survey Date: 10/17/91

OPERATION Minor Comp. Bldg. & Op. Offices

Address Bldg. 25

Type(s) of occupancy Cadwin/Manufacturing

Name of person in charge of energy Timpy Oppal

PHYSICAL DATA:

Building orientation Front faces East

No. of floors 3 1 & 2 are manufacturing 3rd - Admin.

Floor area, gross, square feet 185,886

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N ☒ S ☒ E ☒ W ☒

Figure 15-14. Building Information

Roof:

Type: Flat ☒ Pitched _____ Color: Light _____ Dark _____

Glazing:

Exposure

N

S

E

W

*Type
Double

%Glass/Exterior wall area

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None ☒ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other _____

Steam heating

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 32 people from 0730 to 1600 (hours) Manuf. Div.
50 0730 1600 Prod. Planning

Saturdays:

Sundays, holidays

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

W'L 73F

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water Steam ✓ Electric resistance Other

Heating plant:
 Boiler No. 136 Rating MBH

Boiler type:
 Firetube Watertube Elec. resist. Electrode Other
 Fuel used Standby
 Hot water supply °F, Return °F
 Steam pressure psi
 Pumps No. Total HP

Room heating units:
 Type: Baseboard Convectors ✓ Fin tube *Parimeter*
 Ceiling or wall panels Unit heaters Other Forced Air

Cooling plant:
 Chillers: No. Total capacity (tons)
 Type: Centrifugal Reciprocating Absorption

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. 120° F °F

Energy Source: Gas _____, Oil _____, Electric _____, Other Steam coil

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
WATERVLIET ARSENAL
DATES: 15 OCT 91 - 18 OCT 91
PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
25 -										
MANUFACTURING	3RD FL	1	MS400	159	159	455	72,345	11	198,949	
	1/2ND FLS	2	F96T12	2,800	5,600	175	490,000	24	2,940,000	
	TOTALS			2,959	5,759		562,345		3,138,949	
			SQ. FT. =	182,550						
			WATTS/SQ. FT. =	3.1						
	OFFICES		SQ. FT. =	60,850			72,345		198,949	
			WATTS/SQ. FT. =	1.2						
	SHOPS		SQ. FT. =	121,700			490,000		2,940,000	
			WATTS/SQ. FT. =	4.0						

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 25 DATE: 10-18-91Notes & Comments: Building Contact : Ted Kawnlcek2 Rooftop package unitsManufactured by TraneModel # SLHCC 604 HA 63CB 41D3D 00AM4BFN460 v, 3 ϕ 2 compressors, 51 A6 condenser fan, 1hp each1 evaporator fan, 30hp1 exhaust fan, 10hpEquipped for economizer cycle

Outside air dampers were about 50%
open when the O.A. temperature was
~ 55°F.

Add thermostatic control valves to hallway and
bathroom radiators

Third Floor exhaust fans are controlled by a
time clock located in the third floor equipment
room - Currently the fans are on all weekend -
Set to turn fans off on Friday afternoon and
on Monday morning.

BLD 25-3 1983 HVAC
 Trane Rooftop 2 Units 60 Ton ea,
 VAV System - electronic control
 Dx cooling ; H.W. heat

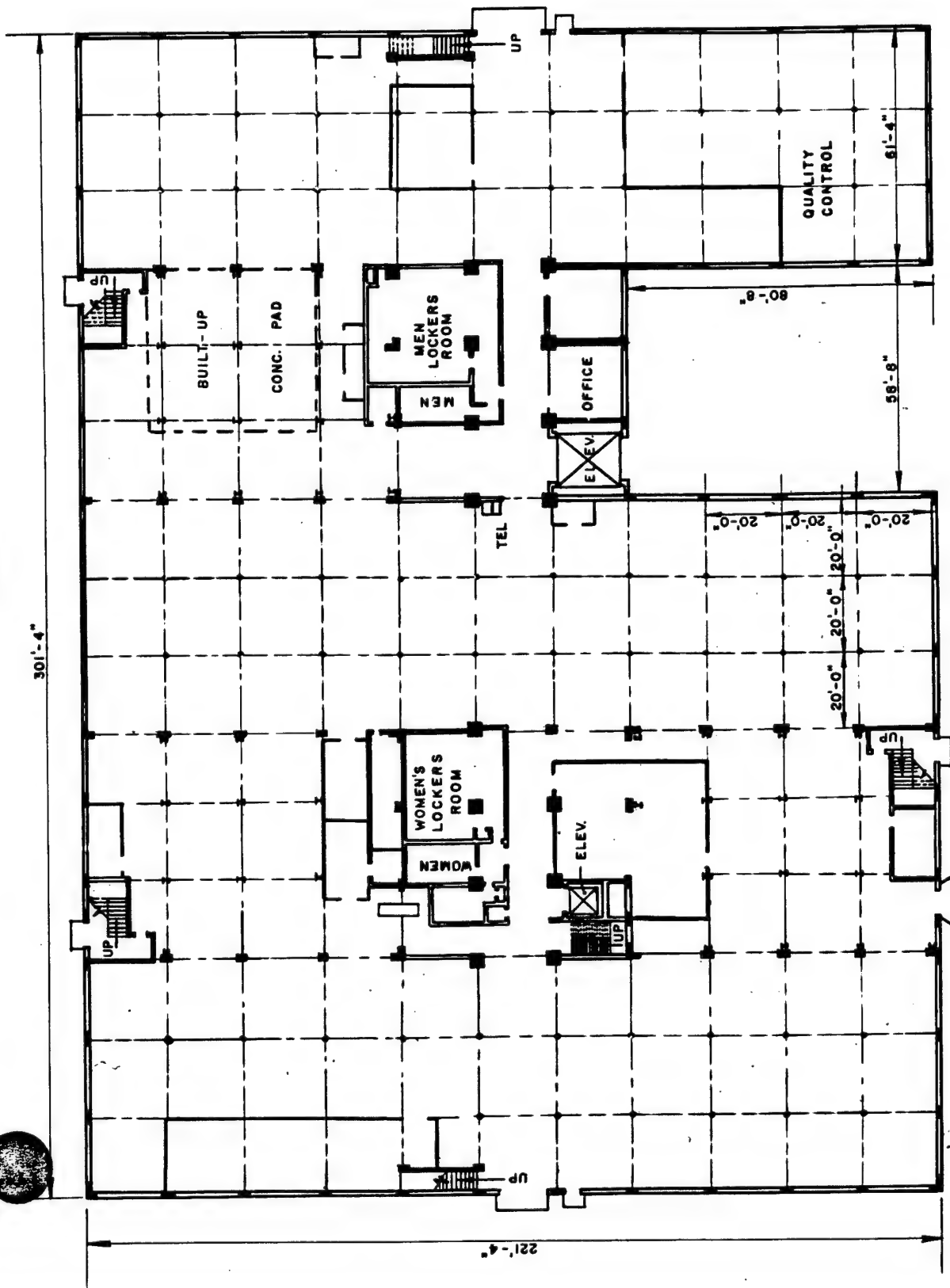
Components Repl: Compressor 1986 N. unit
 Master energy controller 1985 " "

● BLD 25-3 Computer Rm. 1983 Tem, Hum.
 1. Trane Computer Rm. AC 1983 10-Ton
 Dx ; Electric heat ; Elec-stm humidifier

2. Airflow Computer Rm AC 1986
 Dx ; Elec heat ; Elec-stm hum.
 Microprocessor Control

Recommendation : The older Trane AC is
 being retained as a back-up unit.

● Therefore, an auto.-start should be
 installed for the back-up AC in event of
 the failure of the primary system.
 during off hours/weekends.



WATERVLIELT ARSENAL

WATERVLIELT, N.Y.

Drawn by: J.R.GANGEMI, A.E. App'd by: *J.R. Gangemi*

Revisions

Date

FIRST FLOOR PLAN

MACHINE SHOP

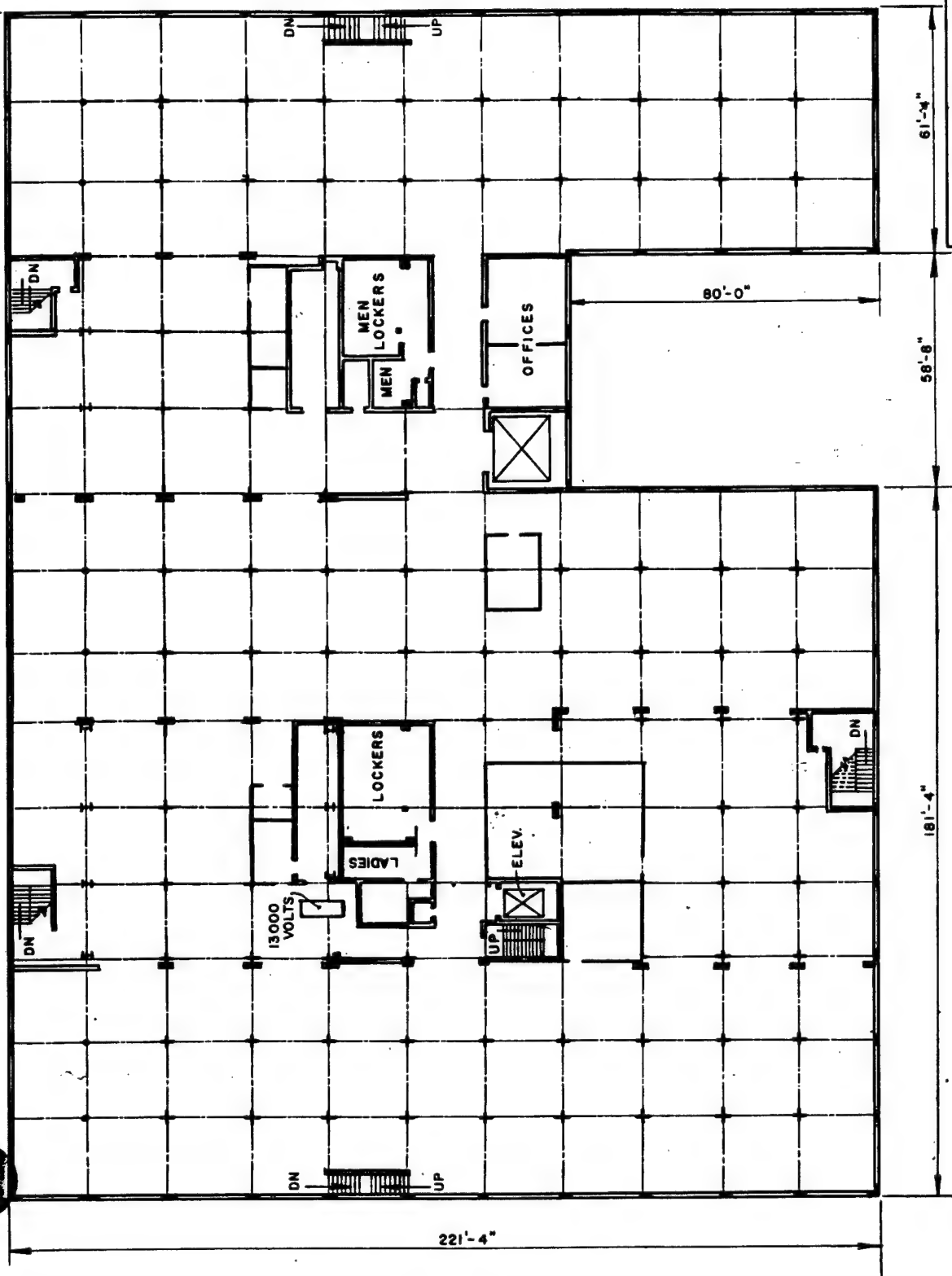
BUILDING NO. 25

Scale: 40' = 1'-0" Date:

NET FLOOR AREA
60,850
Square feet
FLOOR CAPACITY
1000 LBS
Per square foot

25-10

301'-4"



WATERLIET ARSENAL WATERLIET, N.Y.	
Drawn by: J.R. GANGLI, A.E.	Appd by: <i>J. R. Gangli</i>
Revisions	Date
SECOND FLOOR PLAN MACHINE SHOP BUILDING NO. 25	
Scale: 1"=40'-0" Date:	

NET FLOOR AREA
Square feet
FLOOR CAPACITY
Per square foot

25-11



WALTON, ET. N.Y.

RD FLOOR PLAN
MACHINE SHOP
BUILDING NO 25

NET FLOOR AREA	Square feet	FLOOR CAPACITY
100	100	100
200	200	200
300	300	300
400	400	400
500	500	500
600	600	600
700	700	700
800	800	800
900	900	900
1000	1000	1000
1100	1100	1100
1200	1200	1200
1300	1300	1300
1400	1400	1400
1500	1500	1500
1600	1600	1600
1700	1700	1700
1800	1800	1800
1900	1900	1900
2000	2000	2000
2100	2100	2100
2200	2200	2200
2300	2300	2300
2400	2400	2400
2500	2500	2500
2600	2600	2600
2700	2700	2700
2800	2800	2800
2900	2900	2900
3000	3000	3000
3100	3100	3100
3200	3200	3200
3300	3300	3300
3400	3400	3400
3500	3500	3500
3600	3600	3600
3700	3700	3700
3800	3800	3800
3900	3900	3900
4000	4000	4000
4100	4100	4100
4200	4200	4200
4300	4300	4300
4400	4400	4400
4500	4500	4500
4600	4600	4600
4700	4700	4700
4800	4800	4800
4900	4900	4900
5000	5000	5000
5100	5100	5100
5200	5200	5200
5300	5300	5300
5400	5400	5400
5500	5500	5500
5600	5600	5600
5700	5700	5700
5800	5800	5800
5900	5900	5900
6000	6000	6000
6100	6100	6100
6200	6200	6200
6300	6300	6300
6400	6400	6400
6500	6500	6500
6600	6600	6600
6700	6700	6700
6800	6800	6800
6900	6900	6900
7000	7000	7000
7100	7100	7100
7200	7200	7200
7300	7300	7300
7400	7400	7400
7500	7500	7500
7600	7600	7600
7700	7700	7700
7800	7800	7800
7900	7900	7900
8000	8000	8000
8100	8100	8100
8200	8200	8200
8300	8300	8300
8400	8400	8400
8500	8500	8500
8600	8600	8600
8700	8700	8700
8800	8800	8800
8900	8900	8900
9000	9000	9000
9100	9100	9100
9200	9200	9200
9300	9300	9300
9400	9400	9400
9500	9500	9500
9600	9600	9600
9700	9700	9700
9800	9800	9800
9900	9900	9900
10000	10000	10000

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 35 DATE: 10-18-91Notes & Comments: Building Contact: Ted Kawalick9 Heating and Ventilating Unitslocated on the roofSteam heating coilsSteam lines uninsulated inside plowerManufactured by Barry Blower30 hp fan motor7 units have return airOutside air dampers close at 55°FSteam turns on at 60 °F

3LD 35-2 Classrooms 1983 HVAC - Temp
Trane AC 25 Ton
DX COLD Deck ; Strm. Hot Deck
Control : Honeywell Pneumatic
Zone damper control (4 zones)

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
Survey Date: 10/16/91

OPERATION Storehouse & Museum

Address Bldg 38

Type(s) of occupancy Museum in front part / Unheated storage in rear

Name of person in charge of energy William Bradford / Chuck Zimmerman

PHYSICAL DATA:

Building orientation Front faces North

No. of floors 1

Floor area, gross, square feet 29,400

Net air conditioned square feet Only enclosed museum space

Construction type:

Walls (masonry, curtain, frame, etc.) Steel

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat _____ Color: Light _____
 Pitched ☒ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	Single	25%
S	"	"
E	"	"
W	"	"

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric _____
 Gas total energy _____
 Oil total energy _____
 Other Steam - forced air in museum only

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * 3 people from 0730 to 1600 (hours)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Saturdays:

Sundays, holidays

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh

Night _____ °F. dB _____ %rh

Night _____ °F. dB _____ %rh

N'd 75F Poor heating in upstairs office - only 1 converter

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam ☒ Electric resistance _____ Other _____

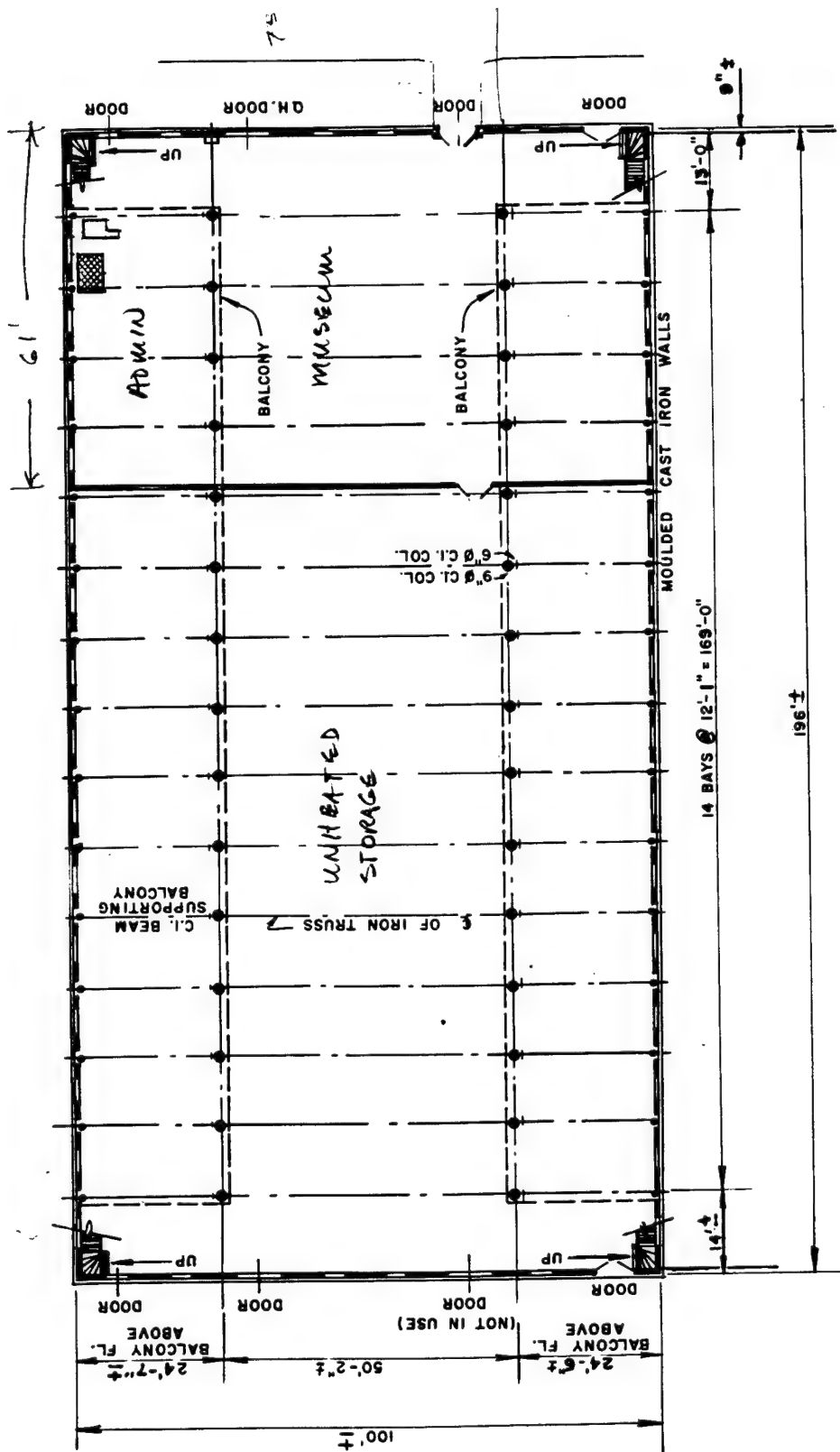
Heating plant:
 Boiler No. 136 Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors _____ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)



38-5

WATERVLIT ARSENAL

WATERVLIT, N.Y.

Drawn by: J.R.GANGEMI, A.E. App'd by: *J.R. Gangemi*

Revisions

Date

GROUND FLOOR PLAN
STOREHOUSE & MUSEUM
BUILDING NO. 38

Scale: 1" = 30'-0" Date:

NET FLOOR AREA
19100 (BALCONY 8450)
Square feet

FLOOR CAPACITY
1000 LBS + 195 LBS BALCONY
Per square foot

1. GENERAL INFORMATION

IDENTITY:

OPERATION Benet Labs

Address Bldg 40

Type(s) of occupancy Admin / Labs / Fam Hsg.

Name of person in charge of energy Gary Conlon

PHYSICAL DATA:

Building orientation Front faces East

No. of floors 2

Floor area, gross, square feet 192,221

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N ☒ S ☒ E ☒ W ☒

Figure 15-14. Building Information

2ND Floor has been remodeled with new hot water heating system
1ST Floor is being remodeled in the same manner.

Roof:
 Type: Flat ☒ Pitched ☒ Color: Light ☒ Dark ☐
 Pitched ☒ metal

Glazing:
 Exposure *Type %Glass/Exterior wall area
 N Double ☐
 S ☐
 E ☒
 W ☐

*Type: Single, double, insulating, reflective, etc.
 Glass shading employed outside (check one)
 Fins ☐ Overhead ☒ None ☐ Other ☐

Glass shading employed inside (check one):
 Shades ☒ Blinds ☒ Drapes, open mesh ☒ Drapes opaque ☐ None ☐ Other ☐

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric ☐
 Gas total energy ☐
 Oil total energy ☐
 Other ☒ Steam - new systems use hot water converter

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * 2 people from 0730 to 1600 (hours)

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

*(Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

W'd 75F

Figure 15-14. Building Information (con't)

Source of heating energy: Hot water Steam ☒ Electric resistance Other

Heating plant: Boiler No. B.136 Rating MBH

Boiler type: Firetube Watertube Elec. resist. Electrode Other

Fuel used Standby

Hot water supply °F, Return °F

Steam pressure psi

Pumps No. Total HP

Room heating units: Type: Baseboard ☒ Convectors Fin tube

Ceiling or wall panels Unit heaters Other Forced air + perimeter hot water

Cooling plant: Chillers: No. Total capacity (tons)

Type: Centrifugal Reciprocating Absorption

Alc on 1st/2nd floors toward building front

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size 80 gal Rated input _____ Water Temp. 110 °F

Energy Source: Gas _____, Oil _____, Electric ☒, Other _____

Figure 15-14. Building Information (con't)

OPERATION	LOCATION	DATE	COMMENTS					
Beneat Labs	Bldg 40	10/18/81						
MFG'R.	LIGHT #	LOCATION NO.	WATTS PER FIXTURE	LUMENS	Hrs. Operated Per Day	Days Operated Per Week	KWH Per Week	COMMENTS
brights	have been		renovated		2nd	Floor		Office - going to
do	same on		1st Floor					
Energy	saves	2	Tube/Fixture		34	watts		w/ reflector (picture
F40	2	18						2nd Fl unrenovated
w/ Diffuser		12						
F40 cw	4							2nd Floor classrooms
	(2 removed)	22						w/o reflector
	↓	28						↓
F40/diffuser	4							Library
	(2 removed)	16						↓
F40/diffuser	4 (2 removed)	30						1st Floor Labs
	b	8						↓
F40/diff	2	32						Security
F96 8'	2	64						Turnst Labs
Presign F40 c-w	2	48						Machine Shop
F96 8'	2	30						Gym
F40	4/2m	20						CPO

Figure 15-16. Energy Survey - Lights

30
30

LIGHTING SURVEY

WATERVL IET ARSENAL

DATES: 15 OCT 91 - 18 OCT 91

PROJECT # 290-0379-002

SQ. FT. = 44,148
WATTS/SQ. FT. = 1.3

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: P. Hutchins Bldg. # 40 DATE: 10/18/91

Notes & Comments: _____

- Employment Office - at end of North wing will not be renovated. Has convectors under windows with T'stats - Some manual valves. Window A/C - 2-paned windows
- Foundry Wing - Old 1-pane windows
75% of wall is glass - Tank assembly wing is similar - Unit heaters are steam fed.
- South wing has manually-controlled convectors (steam) under windows on 1st and 2nd floors

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 40 DATE: 10-17-91Notes & Comments: Building Contact: Ted KawalcekCADD Room / Print Shop: 12ft ceiling, ~19' x 164'Split SystemDirect expansion cooling:252 mbh sensible cooling90 mbh latent cooling342 mbh total cooling capacitySteam Coil heating:398 mbh heating capacityManufactured by Carrier Corp.Evaporator model # 40 RR 03412000 cfm supply air7.5 hp fan motorEconomizer cycleNeeds dampers on the outside air and
exhaust air ducts to balance
the system.Currently sucking air from exhaust
and outside air ducts instead of
return air.Located in ceiling above the
print shop.

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 40 DATE: 10-17-91

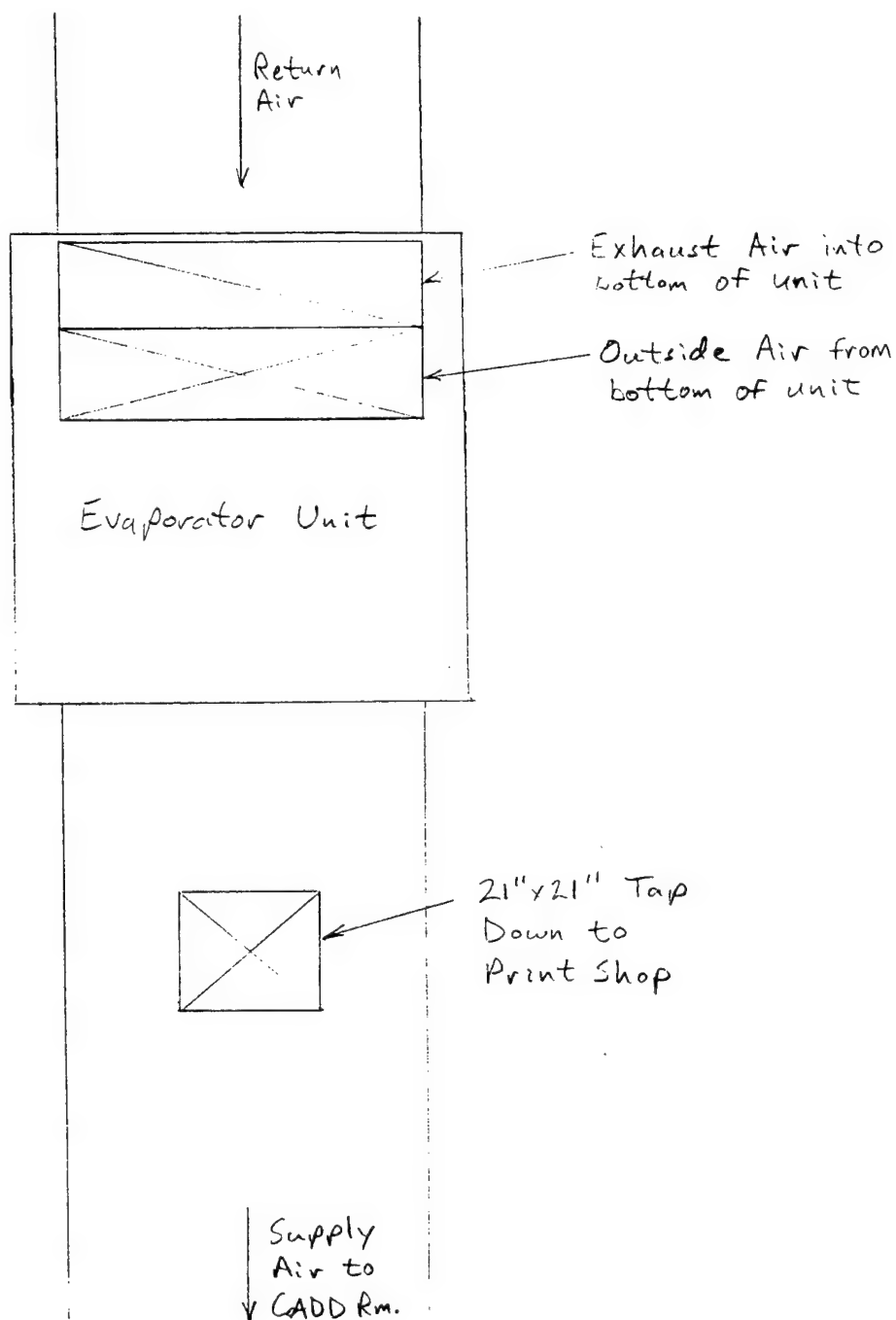
Notes & Comments:

CADD Room / Print Shop (continued):Condenser model # 38 ADO34620Air Cooled3 Fan motors, 1 3/4 hp each1 compressor motor, 460 v, 50 RL AmpsMeasured Data:From supply air ducts

<u>Area</u>	<u>Duct Size</u>	<u>Avg. Vel. Pressure</u>
<u>Print Shop</u>	<u>21" x 21"</u>	<u>0.0539 in w.g.</u>
<u>CADD Room</u>	<u>Get from Plans</u>	<u>0.0666 in w.g.</u>

Micro-Graphics Lab & Microfilm Room:Split system, Direct expansion coolingManufactured by CarrierCondensing Unit: 3 stagesModel # 38 ADO 286103 Fans, 1 3/4 hp each1 compressor, 460 v, 54.4 AMicrographics lab evaporator unit receives
its "fresh" air from the hallway

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 40 DATE: 10-17-91CADD Room/Print Shop Evaporator UnitTop
View

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 40 DATE: 10-17-91

Notes & Comments:

Micro-Graphics Lab / Microfilm Room (Continued) =ECO Possibilities:

- 1) Add Chilled water lines to serve the Micrographics Lab, Microfilm Room and the CADD Room; (Capacity is now available) and install new fan coil units.
- 2) Add Outside air intake for Micro-Graphics Lab (Darkroom). Use economizer cycle for cooling.

Electric Boiler:located in First floor compressor roomProvides humidification for 2nd FloorManufactured by SussmanModel No. ES 90, Serial No. N5-11254-Z80480 V, 3 ϕ , 90 KWBlowdown water was very dirty (use water treatment?)2 similar boilers are located in Building 125

BLD 40 Microfilm 1976 HVAC Tem/Hu
Carrier AC 25 Ton
Dx cool ; stm + electric heat ; stm hum.
Control : Pneumatic - electric

Components replaced :

Compressor - 1980 , 1982 , 1984

Valve plates and/or gaskets 1985 , 86

Cond fan motor - 1981 , 84

Recommendation : Re-design or replace system.
AC serves two areas with widely different
load requirements resulting in inefficient
operation and costly wear + tear on unit.

Outside air could be much better utilized
during cold weather for cooling requirements.

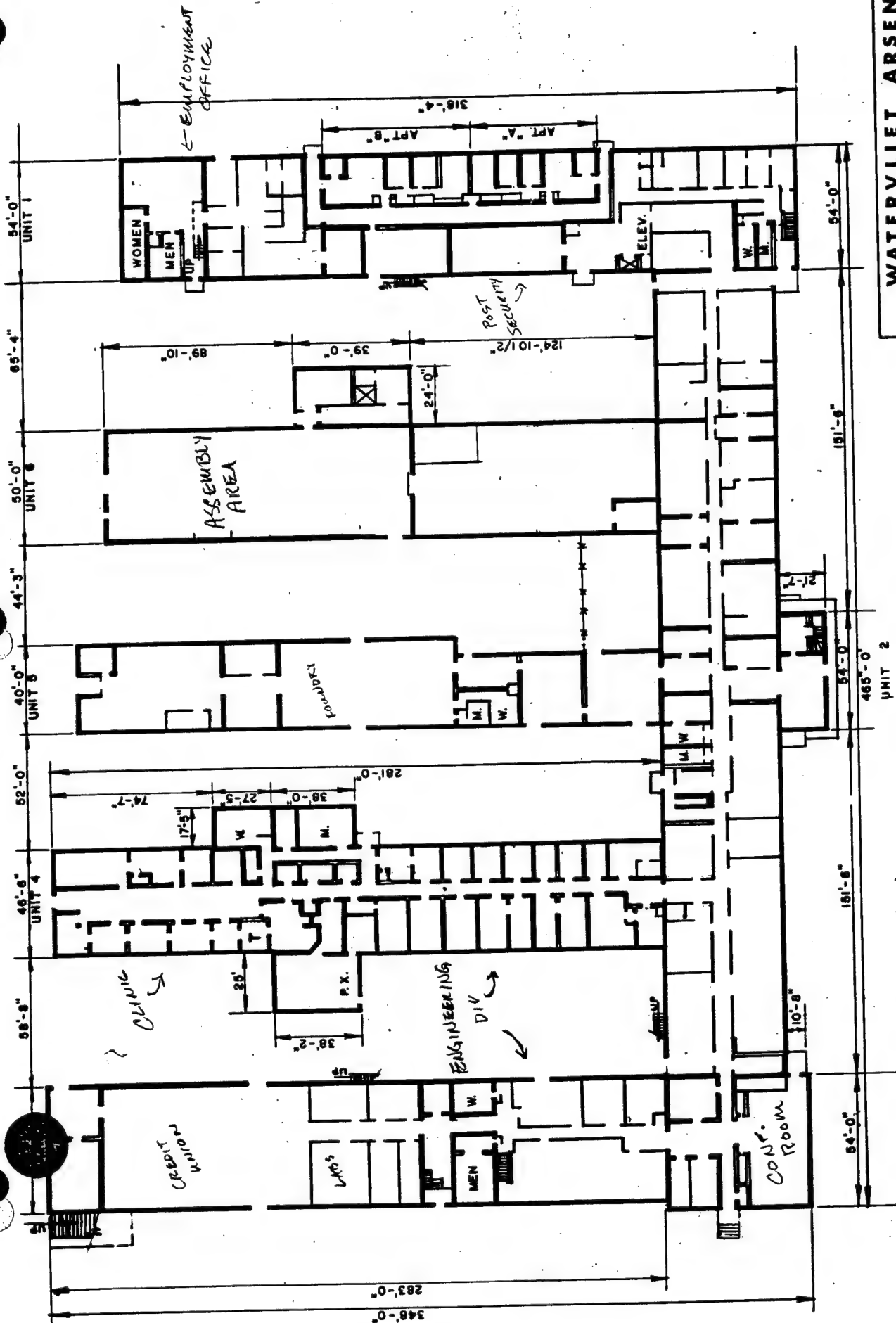
BLD 40 - 4 Drafting Room 1973 HVAC Temp/H
 Carrier 5 Ton
 Dx cool ; Elec reheat ; stm. humidifier
 Control : Pneumatic - electric

BLD 40 N. Conf. Room 1973 Temp.
 Carrier AC - 11 Ton

Comment : Very limited use - Summer cooling when needed

BLD 40 S. Conf. Rm 1967 Temp.
 Carrier AC - 10 Ton
 Dx cool - 2 stage ; Elec. heat - 8 stages
 Charcoal Filter

Comment : Limited use - Summer cooling or winter heating when in use



WATERVLIT ARSENAL

WATERVLIT, N.Y.

Drawn by: J.R. GANGE, A.E. App'd by: J.R. GANGE, A.E. Revisions: Date

FIRST FLOOR PLAN
BENET LABORATORIES
BUILDING NO. 40

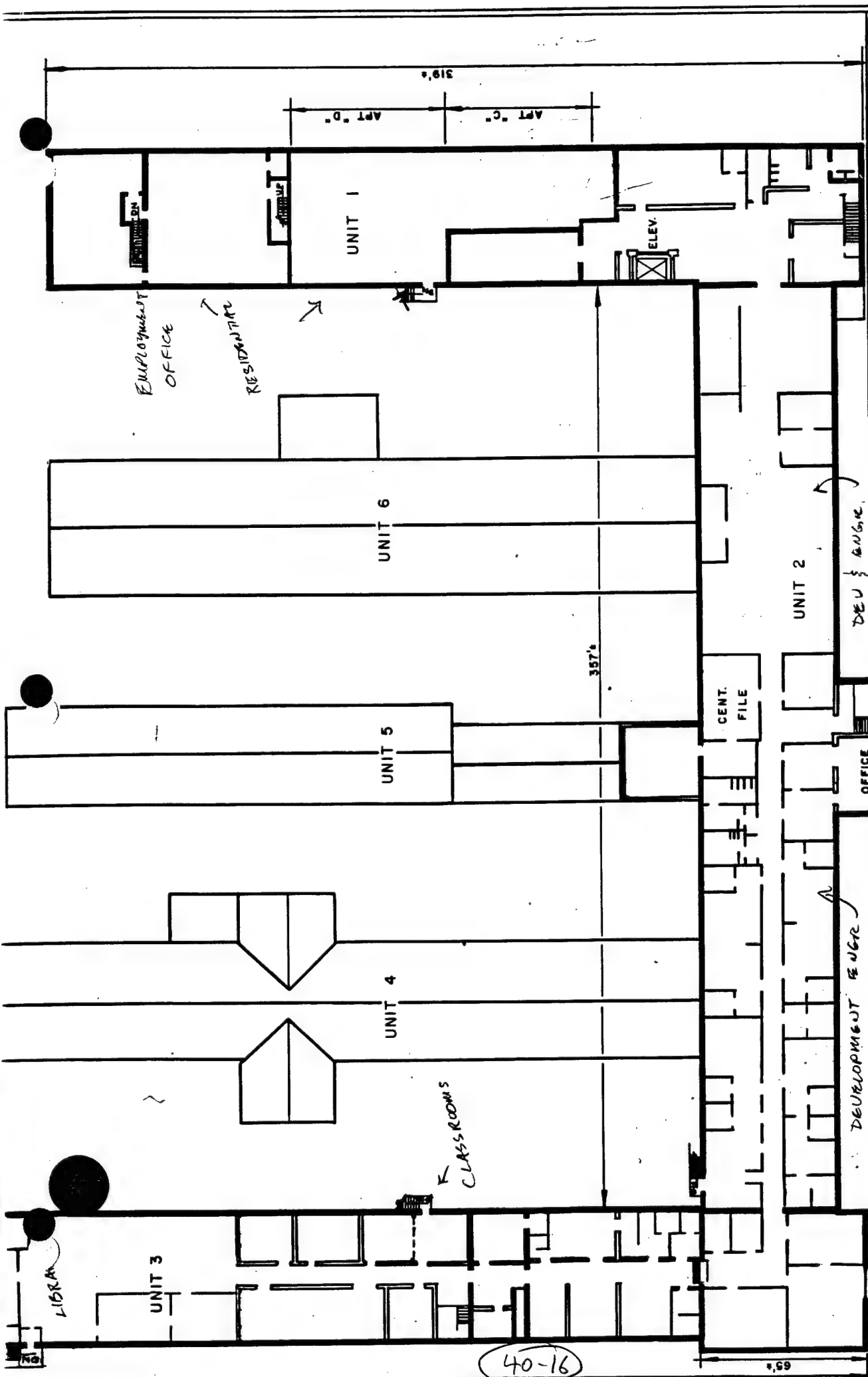
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← 46d → FENCE X

BROADWAY

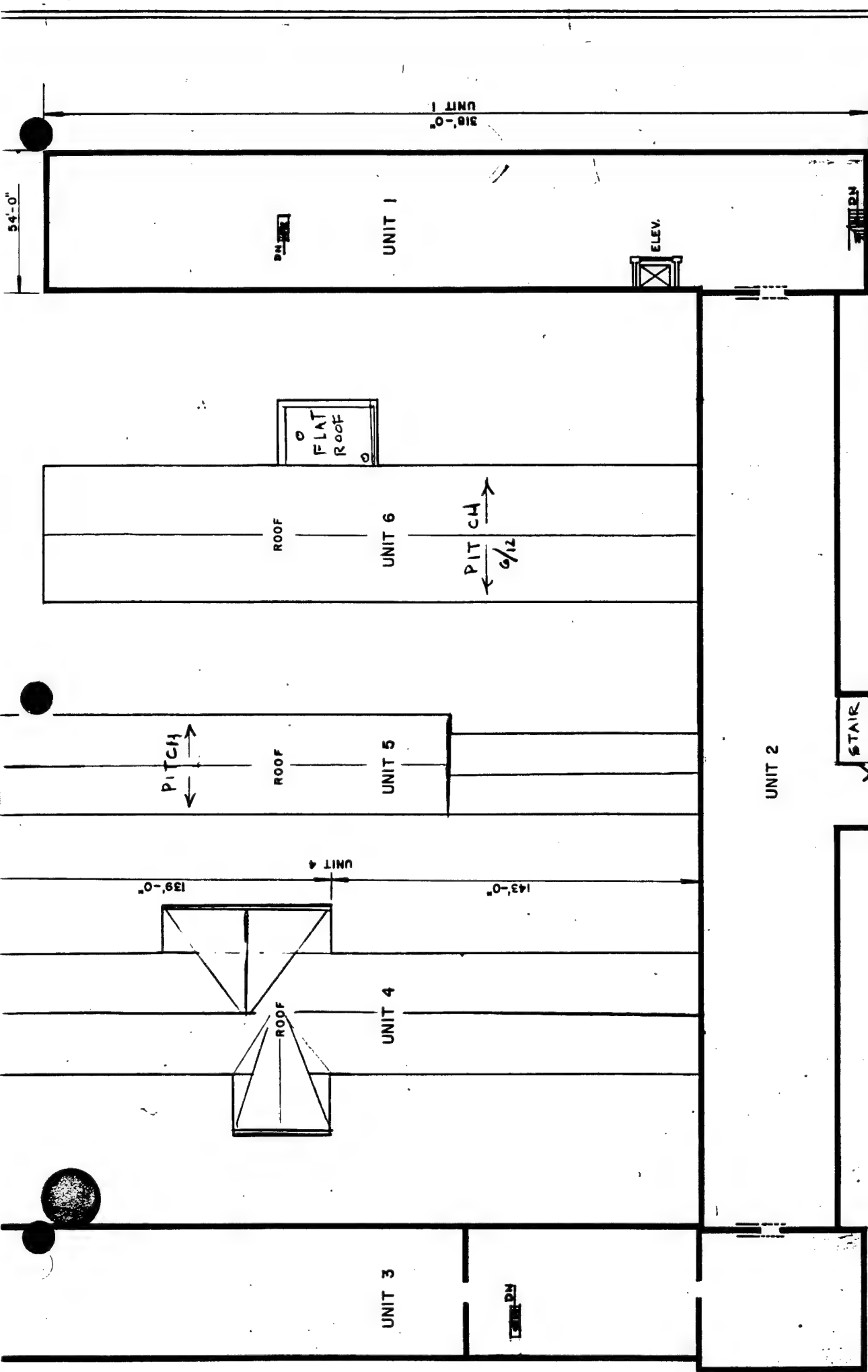
NET FLOOR AREA
138,969
Square feet

FLOOR CAPACITY
1000 LBS
Per square foot



WATERVLIET ARSENAL WATERVLIET, N.Y.	
Drawn by: J.R. GANGE, A.E.	App'd by: <i>J.R. Gange</i>
Revisions	Date
SECOND FLOOR BENET LABORATORIES BUILDING NO. 40	
Scale: 1" = 30'-0" Date:	

NET FLOOR AREA	Square feet
FLOOR CAPACITY	Per square foot
54 LBS.	



WATERVLIIET ARSENAL WATERVLIIET, N.Y.	
Drawn by: J.R.GANGEMI, A.E. App'd by: <i>J.R. Gangemi</i>	Revisions
	Date
THIRD FLOOR BENET LABORATORIES BUILDING NO. 40	
Scale: 1" = 50'-0" Date:	

ATTIC PLAN

NET FLOOR AREA
Square feet
FLOOR CAPACITY
84 LBS
Per square foot

CERAMIC TILE ON CEM. BASE

WOOD RAMP

TILE OVER W.D. FL.

CONC. ON GRADE

UNIT

UNIT 6

UNIT 5

UNIT 4

UNIT 3

UNIT 2

QTRS. AREA

CONC PAD

VAULT

ELEV.

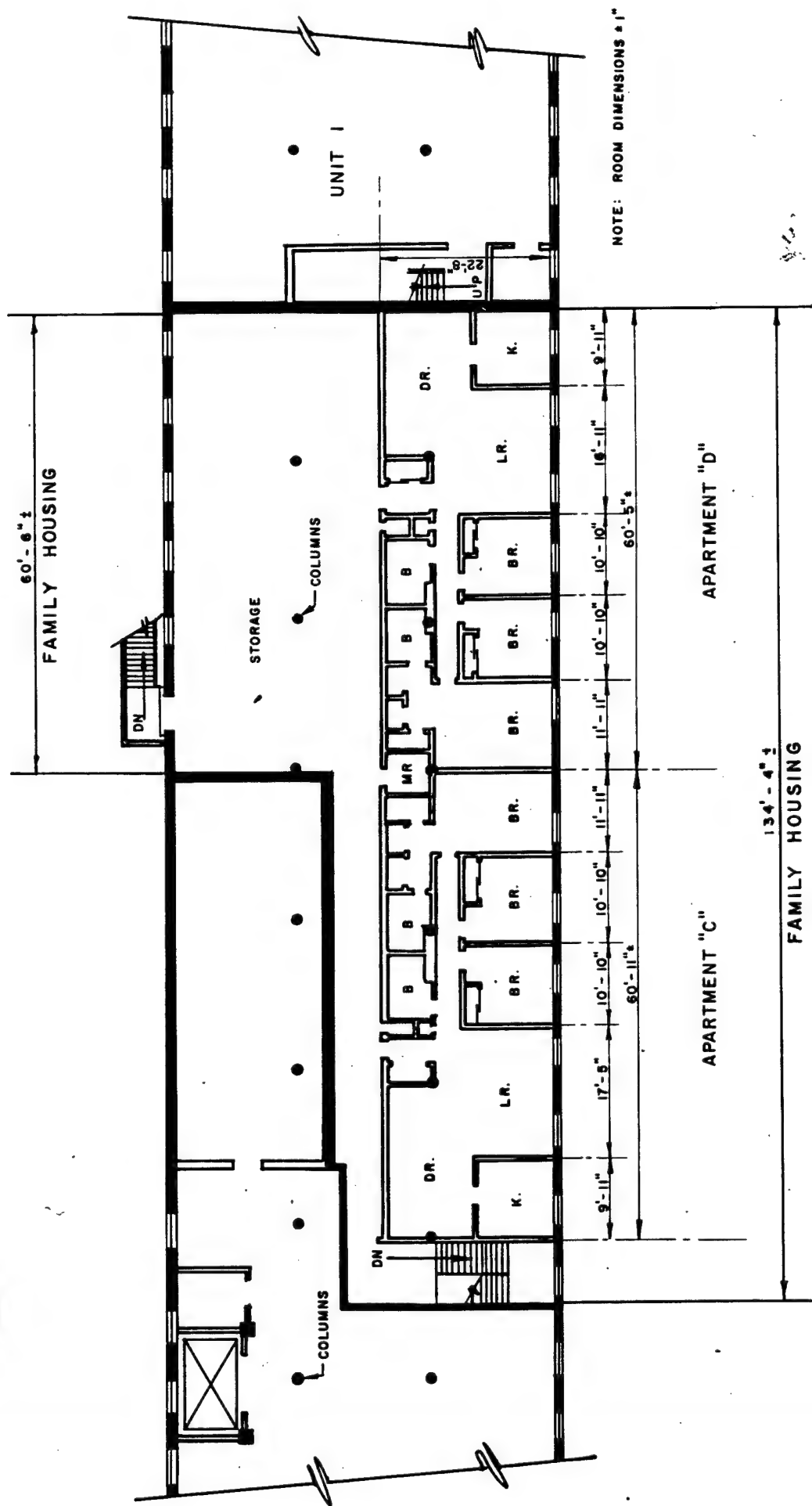
TILE OVER CONC. BASE

82'-0" FULL CELLAR

BASEMENT

WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGE, A.E.	App'd by: J.C. Kestner
Revised by:	Date:
BENET LABORATORIES BUILDING NO. 40	
Scale: 1" = 60'-0" Date:	

NET FLOOR AREA	FLOOR CAPACITY
Square feet	Per square foot



WATERVLIET ARSENÁL

WATERVLIET, N.Y.

Drawn by: J.R.GANGEMI, A.E. App'd by:

Revisions	Date
-----------	------

Date

**SECOND FLOOR
BENET LABORATORIES
BUILDING NO. 40**

Scale: 1/16" = 1'-0" Date:

NET FLOOR AREA

Square feet

FLOOR CAPACITY

54 LOS

Per square foot

9'-6" ± CLG. HT.

1. GENERAL INFORMATION

IDENTITY:

OPERATION Dalliba Hall Product Assurance Div. / Info Mgmt Div.
 Address Bldg 44 Eg Tent Man.

Surveyed by: P. Hutchins
 Survey Date: 10/15/91

Type(s) of occupancy Admin - first floor
Basement

Name of person in charge of energy Bill O'Hara

PHYSICAL DATA:

Building orientation Front faces north

No. of floors 1, plus basement

Floor area, gross, square feet 61,278

Net air conditioned square feet _____

Construction type: red brick

Walls (masonry, curtain, frame, etc.)
 N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat ☒ Pitched _____ Color: Light _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	double	15 / 3 windows per 20'
S		20 1 1/2' x 6'
E		
W		

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds ☒ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS: 100'  20'

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other _____ Steam heating

Ht. and A/C Steam pervinater in older part, but not in newer (East side)

Computers and equip gen. ht in SE corner

Feel airflow from old to new (West to East)

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 90 people from 0730 to 1600 (hours)
450
5
3
1600
2400

Saturdays: _____

Sundays, holidays
 Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____; Sundays, holidays from _____ to _____

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

MAINTAINED INDOOR CONDITIONS:

Winter:	Day _____ °F. dB _____	mph wind _____
Summer:	Day _____ °F. dB _____	mph wind _____
Night:	_____ °F. dB _____	mph wind _____
Night:	_____ °F. dB _____	mph wind _____

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh
Summer: Day _____ °F. dB _____ %rh

measured 75-77°F Admin.

71F45%RA Figure 15-14. Building Information (con't)
Controlled area

Source of heating energy: ☒ Hot water ☐ Steam ☐ Electric resistance ☐ Other

Heating plant:

Boiler No. 136 Rating MBH

Boiler type:

Firetube Watertube Elec. resist. Electrode Other

Fuel used Standby

Hot water supply °F, Return °F

Steam pressure psi

Pumps No. Total HP

Room heating units:

Type: Baseboard ☒ Convectors ☒ Fin tube *East wing only*

Ceiling or wall panels ☒ Unit heaters ☒ Other *West basement only*

Cooling plant:

Chillers: No. 2 Total capacity (tons)

Type: Centrifugal ☒ Reciprocating ☐ Absorption

Forced air system throughout building

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others Economizer or ventilation system _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. _____ °F

Energy Source: Gas _____, Oil _____, Electric _____, Other _____

Figure 15-14. Building Information (con't)

OPERATION BUILDING 44

DATE 10/15/91

LOCATION

MFGR.	LIGHT # FIXTURE	LOCATION	NO.	WATTS PER FIXTURE	FC LUMENS	Hrs. Operated Per Day	Days Operated Per Week	KWH Per Per Week	COMMENTS
4' w/diffusers wall switches	4	1st Fl	60	184	60- 40	7:30-4	5		Some lights disconnected - check w/ FE shop. - did not count
8' fixtures 110/100k	11	NW(A)	7	184	60				
	2	(B)	3	252	45				110 w/bulbs
	3	(C)	1						
	3	(D)	120	142	50				New Area 12x10
EST →	2		5	142					(2/6 taken out)
8' fixtures	4	(E)	66	184	100				Lab / Chemists controls
4'	2	(F)	9	252					Sm Equip Run
	4	(G)	31	184	110				TIME Support group (sm room)
4' w/reflectors	2	(H)	46	184					like area A / other side of wall
	2	(I)	39	92	35-40	F40T12 (3)			Basement Computer Room
	2	+ 4'	36						
Emergency Sensor?	2	*	2						Bread Room
8'	2	(J)	58	252					Basement was gage where house
4'	2	(K)	10	252					Basement coating area (lights on after hours)
Mercury Vapor	2	(L)	1	92					Basement shop
4'	2		3	92					Break Room
8'	2		4	92					Shop
	2		2	252					
	2	Hall	1	252					

Figure 15-16. Energy Survey - Lights

2 Hall 2 92

R18g 44

Domestic hot water ht. _____
 Other (describe: _____) _____

12. LIGHTING

1. Interior Lighting Type Fluorescent
 Watts/Ft. 2 Offices _____ Other _____
 Total Install KW _____ Foot Candles _____
 On-Off from Breaker Panel? _____
 Wall Switch? Yes - most offices Control Switching? _____
 Operating Schedule _____
2. Exterior Lighting Type _____
 Total KW _____
 Operating Schedule _____
3. Remarks _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
44 - PRODUCT ASSURANCE	E	4	F40T12	66	264	192	12,672	11	34,848	
	A	4	F40T12	60	240	192	11,520	11	31,680	
	H	4	F40T12	46	184	192	8,832	11	24,288	
	G	4	F40T12	31	124	192	5,952	11	16,368	
	B	4	F40T12	7	28	192	1,344	11	3,696	
	D	3	F40T12	120	360	144	17,280	11	47,520	
	D	3	F40T12	64	192	144	9,216	11	25,344	
	I	2	F40T12	43	86	96	4,128	11	11,352	
	D	2	F40T12	5	10	96	480	11	1,320	
	L	2	F40T12	4	8	96	384	11	1,056	
	L	2	F40T12	3	6	96	288	11	792	
	HALL	2	F40T12	2	4	96	192	11	528	
	I	2	F40T12(?)	2	4	96	192	11	528	Reflectors
	K	2	F40T12	1	2	96	96	11	264	
				=====	=====	=====	=====	=====	=====	
				454	1,512		72,576		199,584	
44 - PRODUCT ASSURANCE	J	2	F96T12	58	116	175	10,150	11	27,913	
	K	2	F96T12	10	20	175	1,750	11	4,813	
	F	2	F96T12	9	18	175	1,575	11	4,331	
	C	2	F96T12	3	6	175	525	11	1,444	
	L	2	F96T12	2	4	175	350	11	963	
	HALL	2	F96T12	1	2	175	175	11	481	
				=====	=====	=====	=====	=====	=====	
				83	166		14,525		39,944	
TOTALS				537	1,678		87,101		239,528	

SQ. FT. = 60,000
 WATTS/SQ. FT. = 1.5

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 44 DATE: 10-15-91Notes & Comments: Building Contact: Ted Kawalcek1st Floor has about 100 occupantsAC-5 serves the 1st Floor for occupant comfort.Chilled water cooling coilLow pressure steam heating coil (preheat position)Barber-Coleman controls include economizer cycle25 hp supply Fan5 hp return FanData from Plans:Supply air = 20,050 cfmMin. Outside air = 5400 cfm945 MBH Cooling, 7.5 hp pump motorCh. Water: 42°F EWT, 52°F LWT, 183 gpmCooling Coil: 35 sq. ft. Face areaEAT = 84.5 °F db / 68.2 °F wbLAT = 55.6 °F db / 54.6 °F wbMeasured Data:Pressure drop across steam coil = $0.86 - 0.41 = 0.45$ in w.g.Supply Fan static pressure = 0.75 in w.g.25% outside air at minimum setting - by
Ted during previous Test & Balance

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 44 DATE: 10-16-91

Notes & Comments:

HV-1 Serves basement offices, store room and metal testing labs. located in the lower basement mechanical room.

Operates 24 hrs, 7 days

30 hp fan motor, 37 A, 460 V, 3 ϕ , 865 RPM

Measured Data:

Motor amps = 15 A

motor speed = 715 rpm

Data from plans: (Dwg. # 7557-5255, sheet 55)

Supply air = 34,390 CFM, 100 % O.A.

Hot water coil: 2847 MBH, 285 GPM

EAT = 2°F, LAT = 77°F

EWT = 180°F, LWT = 160°F

HW From steam converter

15 hp HWS pump motor

Steam - Hot water converter for HV-1:

5000 MBH, 500 gpm, 15 hp HWS pump motor

160°F EWT, 180°F LWT

5 psig steam supply, 5210 lb/hr

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 44 DATE: 10-16-91

Notes & Comments:

Electric Boiler :

Serves 1st Floor and basement areas.

Located in the upper basement mech. room.

Used for humidification, reheat and heating
for AC-5.

Manufactured by Hydro Steam Industries

Model # SDR 244B-21-4B

25 lb max. operating pressure (MWAP)

710 lb/hr steam at 210 KW, 480 V, 3 ϕ

Has 36 elements installed at 5000 w each

Maintenance must manually blow down the

boiler every day, and remove scale about
4 times per year.

Ted estimated about 40 manhours per year for
maintenance.

Exhaust Fan #7 :

2 speed, manual control (located in diptank area)

7.5 Hp Fan motor

"Fast" setting, 7520 cfm, 1 shift, 5 days

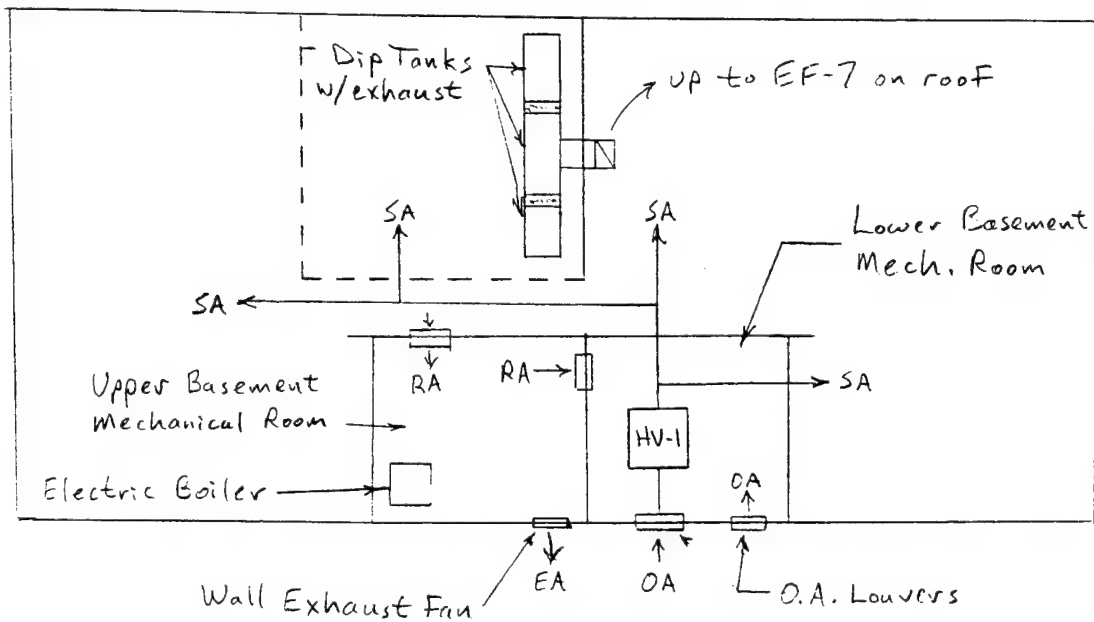
"Slow" setting, 3760 cfm, nights, 5 days

OFF, No exhaust, weekends

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 44DATE: 10-16-91

Basement Plan



BLD 44 METROLOGY LAB 1977 HVAC Temp/Hum
 Dunham - Bush - 75 Ton Chilled water system
 C.W. cooling ; H.W. reheat ; STM humidifier
 Controls : Barber Colman - pneumatic - elec.

Components replaced :

Compressor or stator 1980, 81, 82, 83

Chiller 1984

Cond Fan motor 1986

Comment: There is constant demand on CW +
 HW heat. Water treatment is very important
 and was not initiated until system was several
 years old.

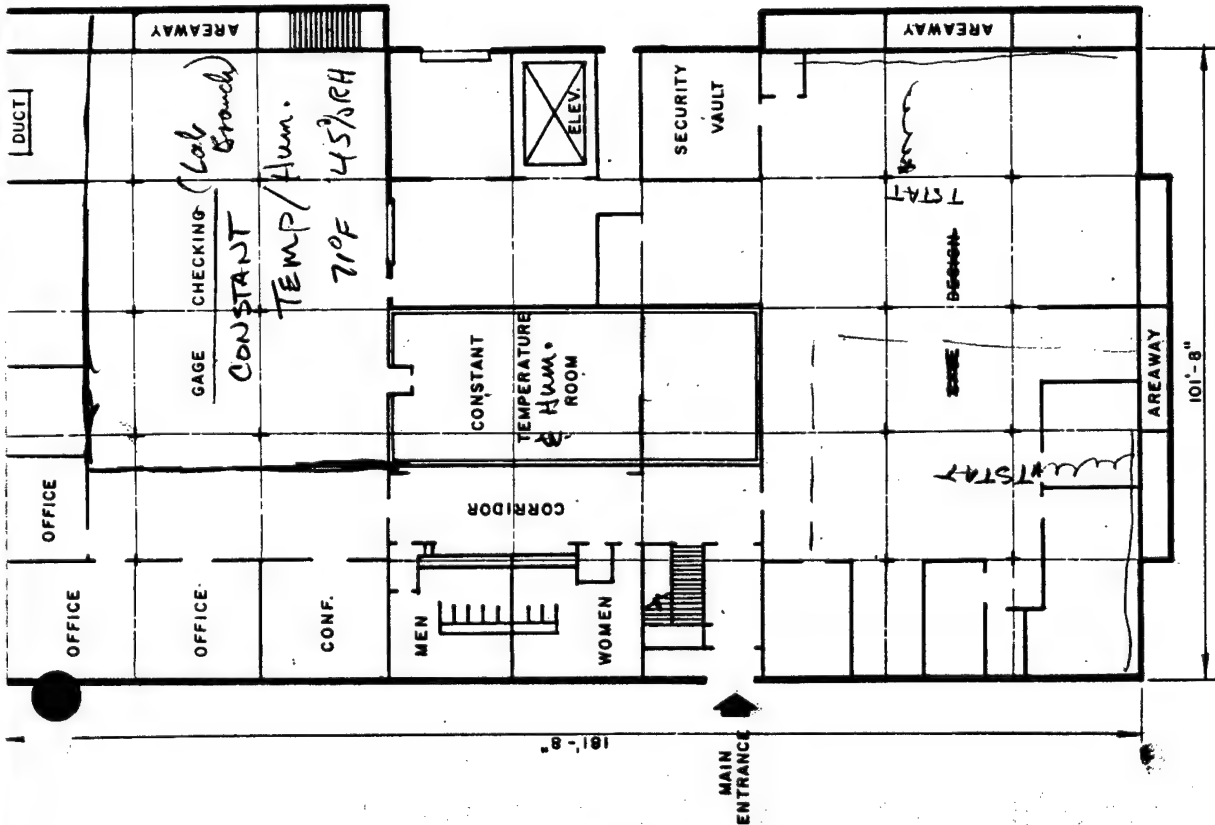
BLD 44 PAD / MISD OFFICES 1977 Temp
 Dunham - Bush 90 Ton
 C.W. cool ; STM preheat ; HVI zone reheat
 Controls : Barber Colman pneumatic - elec

Components replaced :

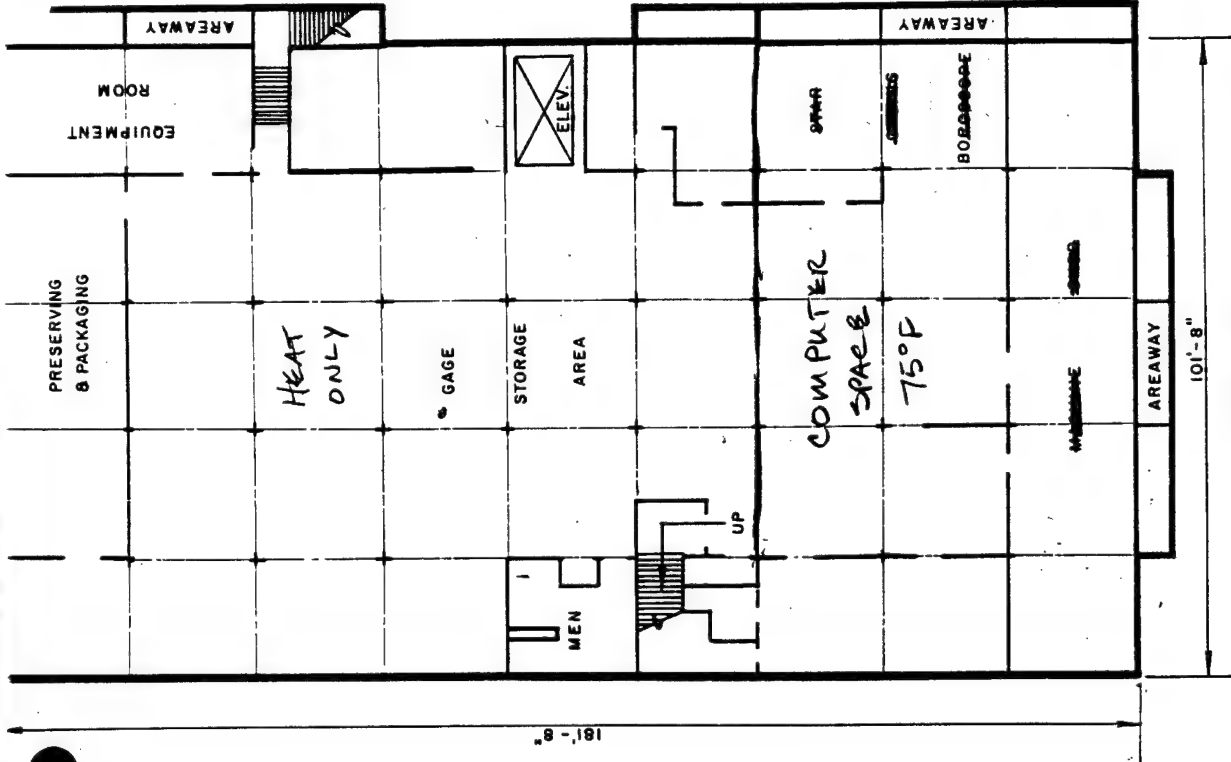
Compressor / stator 1981, 84

Chiller 1983

Comment: Same as above for Metrology Lab.



FIRST FLOOR



BASEMENT

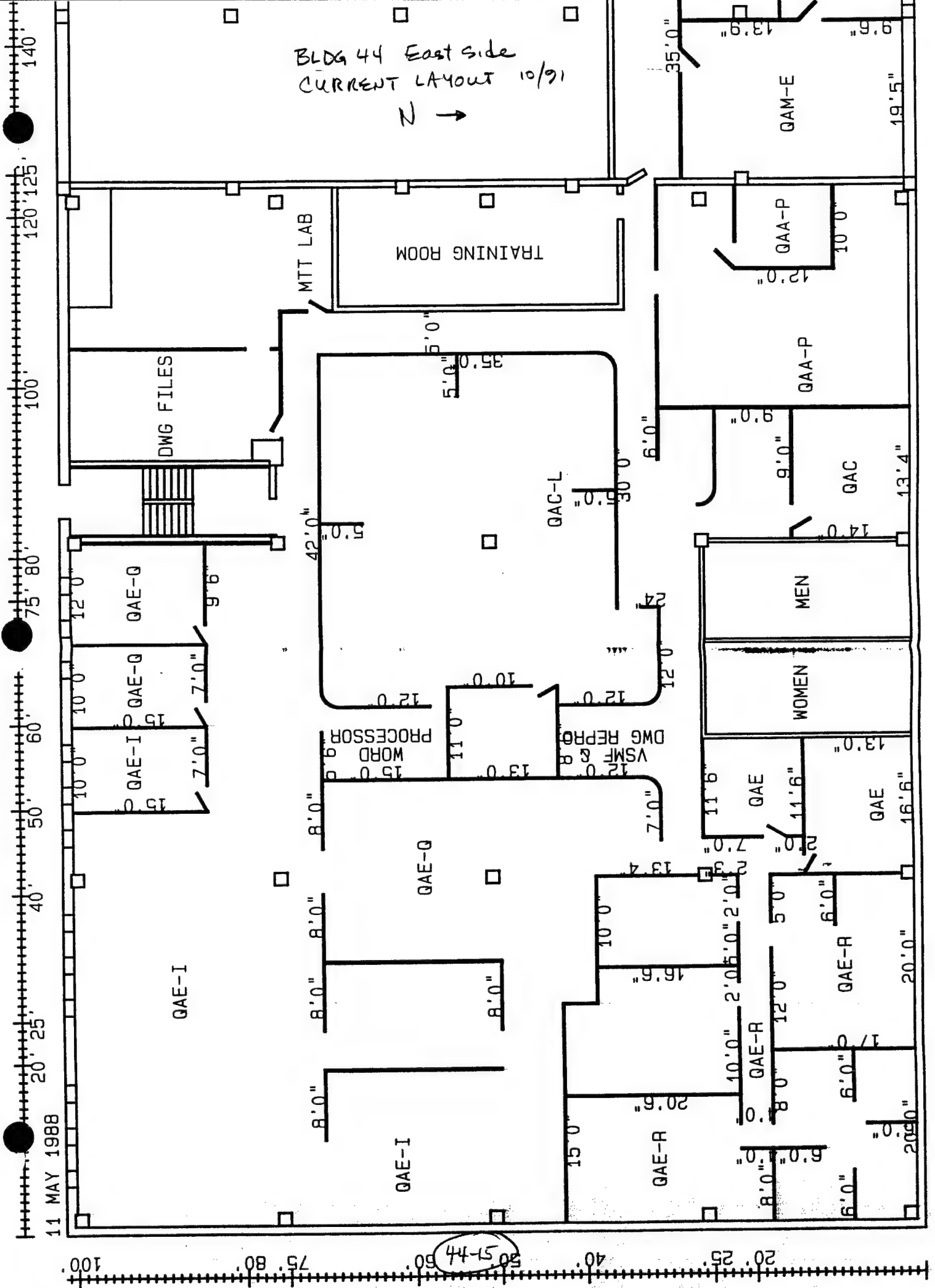
WATERVLIET ARSENAL WATERVLIET, N.Y.	
Drawn by: J.R. GANEMI, A.E. Appd by: <i>[Signature]</i>	Revisions: _____ Date: _____
DALLIBA HALL BUILDING NO. 44	
Scale: 1" = 30'-0" Date: _____	

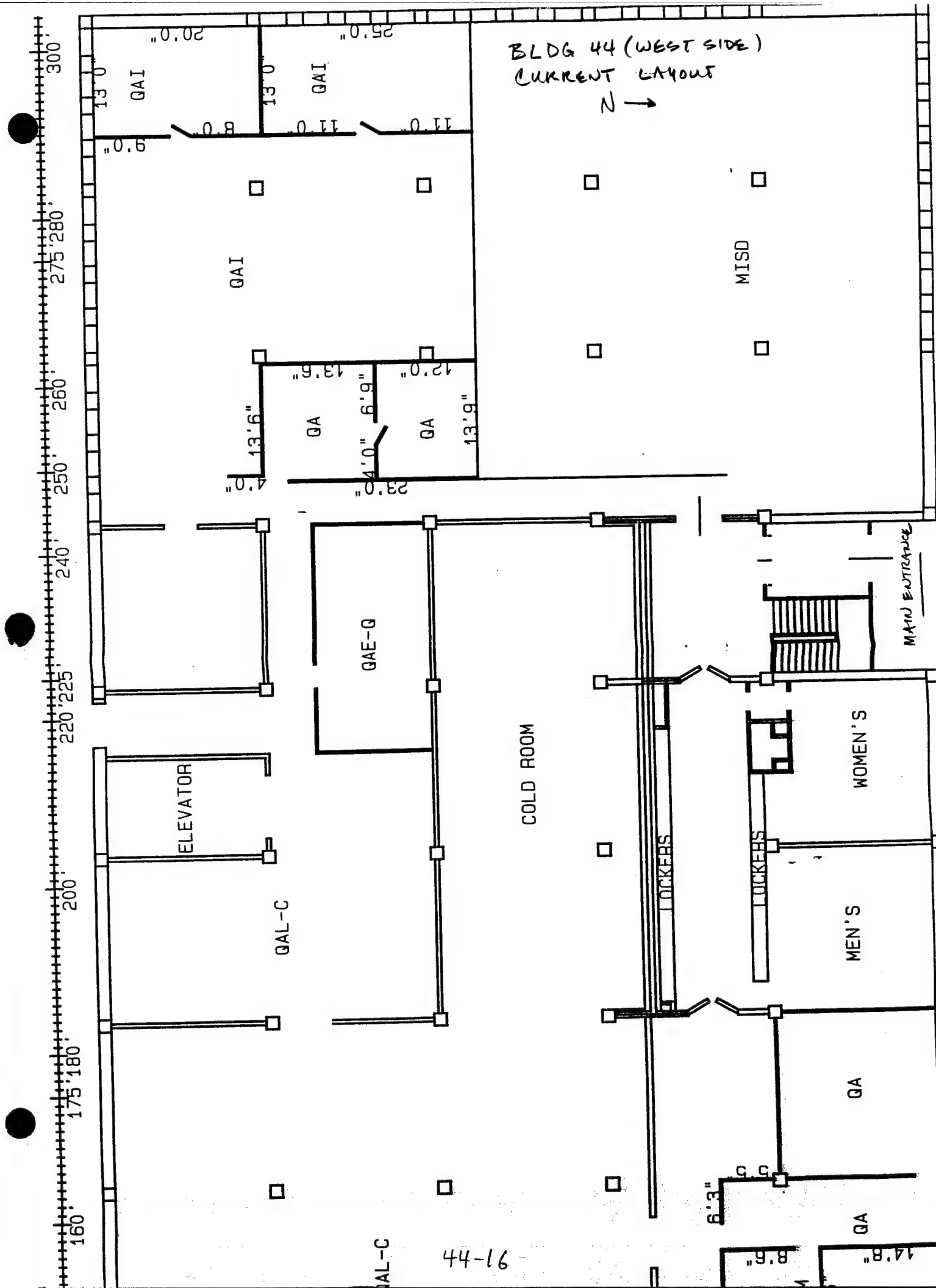
NET FLOOR AREA	FLOOR CAPACITY
Square feet	1ST FL 100LBS - 2ND FL 100LBS
	Per square foot

DEM - BILL O'HARA

44-14

N

$$Z \rightarrow$$




[illegible]

Figure 15-16. Energy Survey - Lights

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
110 - MANUF.		2	F90T12	100	200	200	20,000	24	120,000	
		3	F40T12	100	300	144	14,400	24	86,400	
		2	F96T12	324	648	175	56,700	24	340,200	
	TOTALS			524	1,148		91,100		546,600	
			SQ. FT. =	69,525						
			WATTS/SQ. FT. =	1.3						

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hitchman
 Survey Date: _____
 OPERATION Heavy Caliber Tube Bldg. Telecommunications Bldg.
 Address Bldg 112

Type(s) of occupancy Electronics/Computers/Admin

Name of person in charge of energy Edward Maruszak / Tim Keef (Telephone Rm.)

PHYSICAL DATA:

Building orientation East side near center of Bldg 110

No. of floors 1

Floor area, gross, square feet ~40 x 40

Net air conditioned square feet ~1600 ft²

Construction type:

Walls (masonry, curtain, frame, etc.)

N — S — E — W —

Figure 15-14. Building Information

Roof:

Type: Flat _____ Color: Light _____
 Pitched _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	—	0
S	—	0
E	—	0
W	—	0

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead _____ None ☒ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None ☒ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS.

BUILDING TYPE:

All electric _____
 Gas total energy _____
 Oil total energy _____
 Other Steam baseboard + A/C

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * _____ people from _____ to _____ (hours)

 Saturdays: _____

 Sundays, holidays _____

 Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____
 * (Account for 24 hours a day. If unoccupied, put in zero)

112-3

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind
 Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind
 MAINTAINED INDOOR CONDITIONS:
 Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh
 Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Wd 74 F

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam ☒ Electric resistance _____ Other _____

Heating plant:
 Boiler No. 136 Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard ☒ Convectors _____ Fin tube _____
 Ceiling or wall panels _____ Unit heaters _____ Other _____

Cooling plant:
 Chillers: No. 1 Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating ☒ Absorption _____

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper Needs better control in winter

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. _____ °F

Energy Source: Gas _____, Oil _____, Electric _____, Other _____

Figure 15-14. Building Information (con't)

1. GENERAL INFORMATION

IDENTITY:

OPERATION

Maggs Research Center

Address Bldg 115

Surveyed by:

P. Hutchins

Survey Date:

10/16/91

Type(s) of occupancy

Admin, Lab, Test cells (High Pressure) on 1st Fl

Name of person in charge of energy

John Wroczalski

PHYSICAL DATA:

Building orientation

Long Dimension Run N/S

No. of floors

2

Floor area, gross, square feet

49,926

Net air conditioned square feet

Construction type:

Walls (masonry, curtain, frame, etc.)

N S E W

W

Figure 15-14. Building Information

Source of heating energy:
 Hot water _____ Steam _____ Electric resistance _____ Other _____

Heating plant:
 Boiler No. _____ Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors ☒ Fin tube _____
 Ceiling or wall panels _____ Unit heaters ☒ Ext Office West side
 _____ Other _____

Cooling plant:
 Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

Specially conditioned Test cells on 1st Fl - Production Area (High bay)

*(Admin)
 Hand valves 1st Fl West side
 control valves in East side lobby*

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. _____ °F

Energy Source: Gas _____, Oil _____, Electric _____, Other Steam

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
WATERVLIET ARSENAL
DATES: 15 OCT 91 - 18 OCT 91
PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
115 - MAGGS RESEARCH CENTER	2ND FL	2	F40T12	10	20	96	960	11	2,640	
		3	F40T12	28	84	144	4,032	11	11,088	
		3	F40T12	112	336	144	16,128	11	44,352	
		3	F40T12	12	36	144	1,728	11	4,752	
		3	F40T12	54	162	144	7,776	11	21,384	
		3	F40T12	35	105	144	5,040	11	13,860	
	1ST FL	4	F40T12	7	28	192	1,344	11	3,696	
		2	F40T12	16	32	96	1,536	11	4,224	
		2	F40T12	60	120	96	5,760	11	15,840	
		2	F40T12	36	72	96	3,456	11	9,504	
		2	F40T12	74	148	96	7,104	11	19,536	
		2	F40T12	33	66	96	3,168	11	8,712	
		2	F40T12	4	8	96	384	11	1,056	
		2	F40T12	31	62	96	2,976	11	8,184	
		2	F40T12	46	92	96	4,416	11	12,144	
		2	F40T12	40	80	96	3,840	11	10,560	
					=====		=====		=====	
					598	1,451	69,648		191,532	
	1ST FL	2	F96T12	10	20	175	1,750	11	4,813	
	TOTALS				608	1,471	71,398		196,345	
				SQ. FT. =		58,000				
				WATTS/SQ. FT. =		1.2				
	1ST FL				SQ. FT. =		32,500	35,734	98,269	
				WATTS/SQ. FT. =		1.1				
	2ND FL				SQ. FT. =		15,500	35,664	98,076	
				WATTS/SQ. FT. =		2.3				

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 115 DATE: 10-16-91Notes & Comments: Building Contact : Jimmy YettoChillers:Located in the First Floor mechanical room.Manufactured by the Trane Company2 Centravac, centrifugal type, 2 stage chillersInstalled in 1973460 V, 3 ϕ , 183 A185 Tons each, one is a back-up15 hp chw supply pump30 hp condenser water supply pumpControls maintain 48-50° CHWS Temp.AHU #1:Located in first floor mechanical room.Provides outside air with steam preheat to6 Fancoil units on the first floor.Cooling is provided by chilled water coils in
the Fan Coil units, Room air is recirculated.Measured Data:

<u>Duct</u>	<u>Duct Size</u>	<u>Avg. Vel. Press.</u>
<u>Main Supply</u>	<u>36"x24"</u>	<u>0.1650</u>
<u>Mech. Rm. Vent</u>	<u>10"x10"</u>	<u>0.0805</u>
<u>Rm. 118 Takeoff</u>	<u>8"x6"</u>	<u>0.2290</u>

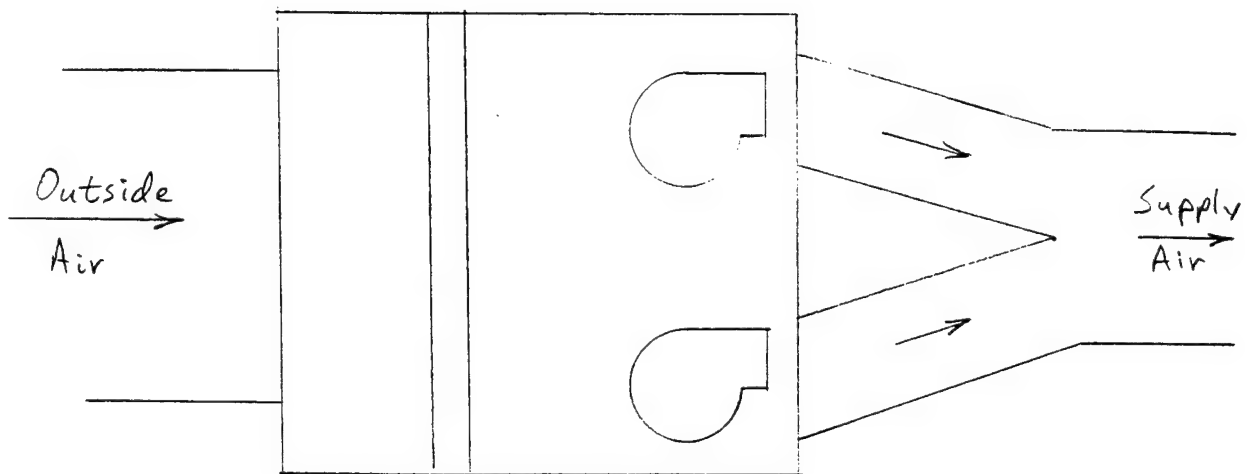
BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 115 DATE: 10-17-91

Notes & Comments:

AHU #1 (continued):Static pressure across the Fan:Supply 0.4694 in w.g.Return -1.007 in w.g.Total 1.4764 in w.g.Motor Data: 1-7.5 hp motor drives 2 Fans460 V, 3 ϕ , 10 Amp, 1740 RPMReadings: 5 amps, 923 RPMAHU #2:Located in crawl space above the second
Floor storeroom.Serves the 2nd Floor fan coil units with
outside air, Room air is recirculated by F.C.'sHas a steam preheat coilManufactured by The Trane CompanyClimate Changer, Type M-1248°F outdoor air, 71°F discharge air temps.Fan motor data:No nameplate, estimate between 2-5 HpReadings: 835 RPM, 2 amps

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 115DATE: 10-17-91Top View of AHU #1

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 115 DATE: 10-17-91

Notes & Comments:

AHU #2 (continued):Static pressure across the Fan:Supply 0.3379 in. w.g.Return -1.110 in w.g.Total 1.4479 in w.g.AHU #3:Located in the crawl space next to the high bay area.Serves the new control area with outside air, chilled water cooling and steam heating (in reheat position)Motor Data: 2 hp Fan motor430V, 3Ø 1725 RPMReading: 840 RPMSupply duct is 23" x 15"Avg. Vel. Pressure reading = 0.2098 in w.g.Static Pressure across the Fan:Supply 0.3156 in w.g.Return -0.8747 " "Total 1.1903 " "

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 115 DATE: 10-16-91

Notes & Comments:

Domestic Hot Water Heater:Located in the first floor mechanical roomManufactured by A.O. SmithModel # DVE 120 730Serial # 730-H-75-00272480 V, 3 ϕ , 38.5 Amps2 elements at 16 Kw each

Electric reheat coils are installed in 25 of
the room fan coil units. They range from
3 to 28 amps. The kilowatt rating from
the plans are:

1) 6 Kw	10) 6 Kw	19) 4 Kw
2) 7.5 "	11) 7.5 "	20) 2 "
3) 2 "	12) 7.5 "	21) 4 "
4) 7.5 "	13) 10 "	22) 4 "
5) 3 "	14) 2 "	23) 4 "
6) 5 "	15) 3 "	24) 2 "
7) 2 "	16) 3 "	25) 3 "
8) 6 "	17) 3 "	
9) 3 "	18) 5 "	

REPLACEMENT - (FREE STANDING)

BLD 115 Computer Lab 1969 HVAC Term/H
Carrier 28 Ton

Dx cooling ; elec. heat ; stm. humidity

Components replaced:

Compressor 19.75 , 80

Cond fan motors (3)

evap " " (2)

Comment: Constant demand on unit for HVAC

BLD 115 Weapons Dev 1971 HVAC
TRANE CENTRAVAC 2 Units 154 Ton ea
C.W. cooling ; HW heat

Main Air handlers AHU1 - 1st Floor
AHU2 - 2nd "

Stm. preheat ; CW cool ; Stm humidity

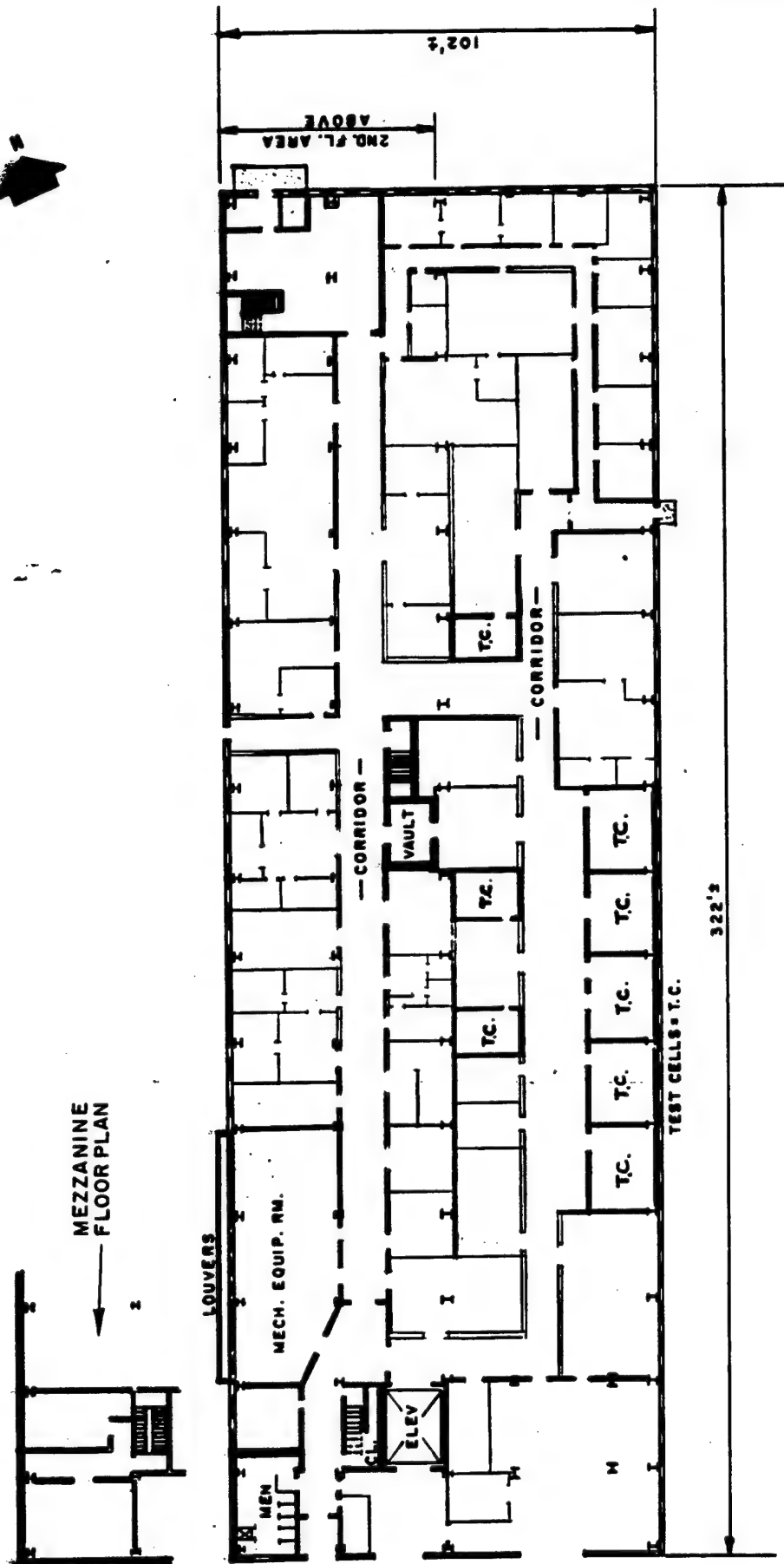
Fan coil Units: FC 1-7 1st Floor
FC 8-11 2nd "

Controls : Johnson pneumatic

BLD 115 Weapons Dev 1980 HVAC
Addition To existing CW, HW system

Main Air Handler AH1
Stm preheat ; cw cool ; Stm humid

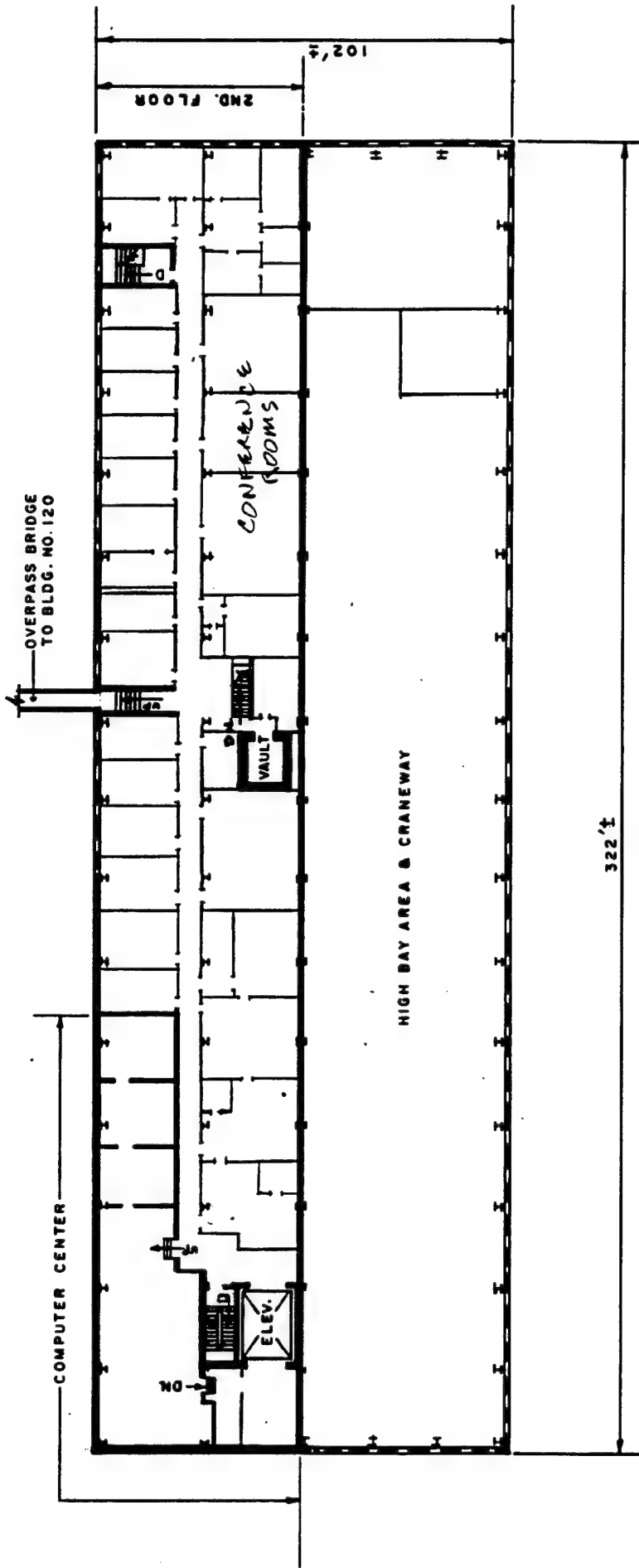
Fan coils FC 1-6 CW cooling



115-15

WATERVLIET ARSENAL			
WATERVLIET, N.Y.			
DRAWN BY	E. LANSBURG	APP'D. BY	
FIRST FLOOR		REV.	DATE
MAGGS RESEARCH		EL	2/76
BUILDING NO.		TR	4/76

NET FLOOR AREA
32,300
SQUARE FEET
FLOOR CAPAC'



WATERVLIET ARSENAL			
WATERVLIET, N.Y.			
DRAWN BY: E. LANSBURG		APPROVED BY:	
SECOND FLOOR PLAN		REVISIONS	DATE
MAGGS RESEARCH CENTER		EL	2/76

NET FLOOR AREA
15,500 SQ. FT.

FLOOR CAPAC
300,000 LB.

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. Hutchins
 Survey Date: 11/16/91

OPERATION

Facilities Office and Shops

Address Bldg 120

Type(s) of occupancy Admin 1st Fl, Labs 2nd Fl, 3rd Shops/Storage

Name of person in charge of energy JACK COLLINS

PHYSICAL DATA:

Building orientation Building Front faces East

No. of floors 3

Floor area, gross, square feet 101,975

Net air conditioned square feet _____

Construction type:

Walls (masonry) curtain, frame, etc.)

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof:

Type: Flat ☒ Pitched _____ Color: Light _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	Single	10%
S	_____	_____
E	_____	_____
W	_____	_____

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None _____ Other _____
Some have colored plastic sheets (East-facing Offices)

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS.

BUILDING TYPE:

All electric _____
 Gas total energy _____
 Oil total energy _____
 Other: Steam perimeter with forced air central A/C

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: * 100 people from 730 to 1600 (hours)
2 1600 2400 Electrician/Plumber
1 2400 0800 Plumber
 Saturdays: _____
 Sundays, holidays _____
 Hours air conditioned: Weekdays from 730 to 1600; Saturdays - to - Sundays, holidays from - to -
 * (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind
 Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh
 Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

meas'd 74°F 30%rh
 74-78 2
 74 1

Figure 15-14. Building Information (con't)

Source of heating energy: Steam ☒ Electric resistance Other

Heating plant:
 Boiler No. 136 Rating MBH

Boiler type:
 Firetube Water tube ☒ Elec. resist. Other
 Fuel used Standby
 Hot water supply °F, Return °F
 Steam pressure psi
 Pumps No. Total HP

Room heating units: 1st FL 2nd FL with control valves - some don't work
 Type: Baseboard ☒ Convectors ☒ Fin tube 3rd FL steam fed w/ SHT
 Ceiling or wall panels Unit heaters ☒ Other Most pipe insulated
2nd FL convectors with remote control valve many traps leak past downcomers overhead prob. individual room H/C units

Cooling plant:
 Chillers: No. Total capacity (tons)
 Type: Centrifugal Reciprocating Absorption

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size _____ Rated input _____ Water Temp. 120 °F

Energy Source: Gas _____, Oil _____, Electric _____, Other _____

Figure 15-14. Building Information (con't)

Bldg 120

Domestic hot water ht. _____
 Other (describe: _____) _____

12. LIGHTING

1. Interior Lighting Type FL
 Watts/Ft. 2 Offices _____ Other _____
 Total Install KW _____ Foot Candles _____
 On-Off from Breaker Panel? 3rd Fl 2 breaker boxes
 Wall Switch? W _____ Control Switching? _____
 Operating Schedule 7:30 - 4:00 PM
2. Exterior Lighting Type _____
 Total KW _____
 Operating Schedule _____
3. Remarks _____

Figure 15-14. Building Information (con't)

A COMPENDIUM OF HANDY WORKING AIDS

OPERATION Facilities Offices/Shops			LOCATION		BUDG		DATE		10/16/91	
MFG'R.	LIGHT # FIXTURE	LOCATION NO.	WATTS PER FIXTURE	FC LUMENS	Hrs. Operated Per Day	Days Operated Per Week	KWH Per Week	COMMENTS		
4'	2	Shops	92	30				3rd Floor	} wall switches	
8'	2	1	252	↓				3rd Floor (stacks)		
8'	2	24	252	↓				3rd Fl		
								Daylight - switches could be off - Occupancy Sensors?		
4'	2	Mon	92					2nd Floor Mezzanine/Photo lab		
4'	2	Halls	92					2nd Floor Hallway some disc		
4'	2(4)	Lab	92	125				2 tubs disc.		
Power groove 8'	2	203	450	100				Rm 203		
11"	2	Lab	450					Other Labs -		
4'	4	Lab	184	150				Typical lab (Rm 244) Ten lab		
4'	2	Conf Rm	92					Conf Rm (226) needs occup. sensor		
4'	2	Off	92							
F90T17 4'	2	7	92	25				1st FL CARPENTER SHOP		
	4	Office	184					Office		
	4	Hall	184					Hall		
	4	1	184					Face Area		
	4	1	184					Other Mezz		
								Stairwells 4 fixtures/Fl		
								2 bulbs 4'		

Figure 15-16. Energy Survey - Lights

1st Floor Storage (DRAWINGS) 60 FC
1st FL LATRINE 40 FC

LIGHTING SURVEY
WATERVLIET ARSENAL
DATES: 15 OCT 91 - 18 OCT 91
PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
120 - FACILITIES OFFICES/SHOPS	STAIRS	2	F40T12	12	24	96	1,152	11	3,168	
	3RD FL	2	F40T12	52	104	96	4,992	11	13,728	
	2ND FL	2	F40T12	475	950	96	45,600	11	125,400	
	1ST FL	2	F40T12	88	176	96	8,448	11	23,232	
	MEZZ	2	F40T12	76	152	96	7,296	11	20,064	
				=====			=====		=====	
				703	1,406		67,488		185,592	
	SHOPS	2	F90T17	126	252	215	27,090	11	74,498	Carpenter Shop
	2ND FL	2	F72P617	30	60	380	11,385	11	31,309	Rm. 203 & LABS
	3RD FL	2	F96T12	79	158	175	13,825	11	38,019	
	1ST FL	2	F96T12	5	10	175	875	11	2,406	
				=====			=====		=====	
				84	168		14,700		40,425	
	MEZZ	2	F40T12/U6	4	8	96	384	11	1,056	
TOTALS				947	1,894		121,047		332,879	
				SQ. FT. =	95,965					
				WATTS/SQ. FT. =	1.3					
1ST FL SHOPS				SQ. FT. =	22,500		27,965		74,498	
				WATTS/SQ. FT. =	1.2					
MEZZ/1ST FL				SQ. FT. =	13,430		17,280		47,520	
				WATTS/SQ. FT. =	1.3					
2ND FL				SQ. FT. =	31,000		56,985		156,709	
				WATTS/SQ. FT. =	1.8					
3RD FL				SQ. FT. =	31,000		18,817		51,747	
				WATTS/SQ. FT. =	0.6					

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 120 DATE: 10-15-91

Notes & Comments: Building Contact: Jimmy Yetto

Ground Floor - Offices

1st Floor - offices and shops

Mezzanine - Offices

2nd Floor - Offices and laboratories

AHU #1 serves the ground floor, 1st floor and mezzanine with ventilation air, cooling and heating.

Located in the 1st floor mechanical/storage room near the wood shop.

Multizone unit with 8 zones.

Operates 6am - 6pm, 5 days per week.

Controlled by a 24 hour / 7 day time clock.

Manufactured by Trane Company

Model # CCBA 1456 PAQ

7.5 hp motor, 480 v, 3 ϕ

Readings: 7amps, 997 RPM

Installed in 1979

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd/Green Bldg. # 120 DATE: 10/15/91

Notes & Comments: _____

AHU #1 (continued)

Design data: Supply Air 6250 cfm

Outside Air 930-6250 cfm

Steam coil 5 psig, 73^{lb}/hr, 70 MBH

Ch. Wtr. Coil EWT=45°, LWT=55°F

175 MBH cooling

Heating EAT=60°, LAT=70°F

Measured Data:

Zone	Duct Size	Avg. Vel. Press.	As-Built CFM
1	14x14	0.1007 in.w.g.	1240
2	14x16	0.0467 "	1200
3	10x18	0.1039 "	1000
4	10x14	0.0162 "	600
5	10x14	0.0294 "	700
6	8x10	0.1167 "	450
7	8x10	0.1542 "	360
8	12x12	0.0343 "	700

Static Pressure at Fan: Supply (+) 1.787

return (-) 0.6657

Total 2.4527 in.w.g.

BUILDING DATA NOTES - WATERVLIET ARSENAL

SURVEY BY: Todd / Green Bldg. # 120 DATE: 10-15-91

Notes & Comments: _____

The second floor labs are heated and cooled
by individual room fan coil units.

The fan coil units utilize chilled water for cooling.

A central fan provides the (100%) outside air
to the fan coil units. This fan has a steam
heating coil for winter operation.

The perimeter is heated with steam radiations -
with steam from the main steam plant.

BLD 120-2 W. Side + Center Labs 1968

Dunham-Bush Chiller 150 Ton

C.W. Cool Fan coil units 27

Control - Robertshaw pneumatic

Components replaced:

Chiller repaired leaks 1973

" To be replaced 1986

Compressor 1985 Both

Rebuilt 1974 one

" 1983 one

BLD 120-1 Offices 8 Zones 1980 HVAC

C.W. cooling ; Addition To existing D.B.

150 Ton AC

Comment: AC or cooling in BLD 120 is basically CW chilled water dependent on some 200 Tons of refrigeration about 20 years old.

Both CW systems could be replaced by a single system OR existing CW piping could be joined and cooled by the 150 Ton units.

Water Treatment, very important, was only started in 1983.

BLO 120-2 E. Side Labs 1964 HVAC

Trane 40 Ton

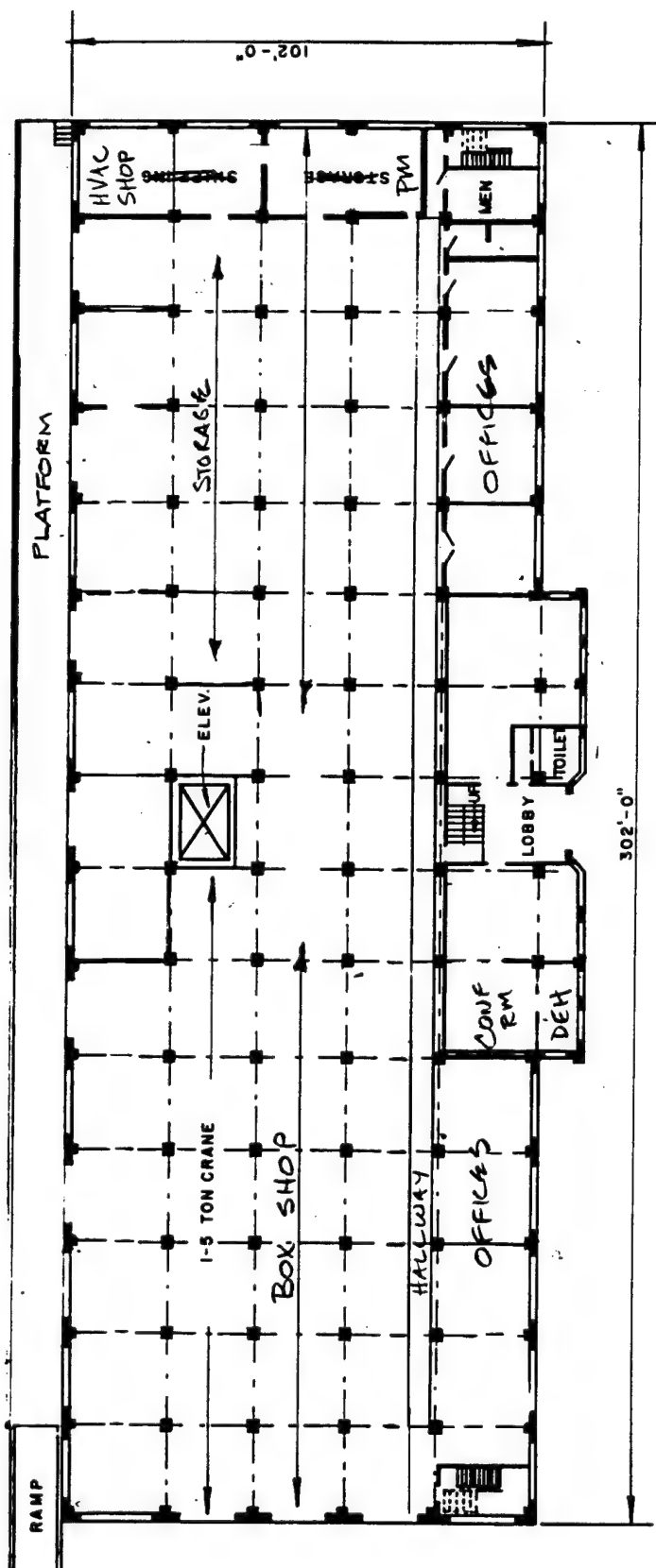
C.W. cooling ; elec heat ; Fan coil units (5)

Control B.C. electric ; Robertshaw elec

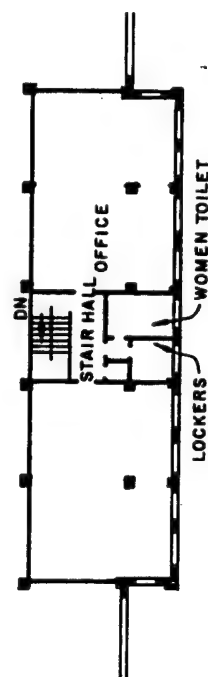
Components replaced

Water cooled condenser + Tower replaced
by air cooled condenser 1983

Compressor ; 1972 81



BUILT 1941



NET FLOOR AREA
31,000
SQUARE FEET
(FIRST FLOOR.)
FLOOR CAPACITY
1000 LBS
PER SQUARE FOOT
(FIRST FLOOR.)

NET FLOOR AREA
2,965
Square feet
(MEZZANINE FL.)
FLOOR CAPACITY
400 LBS
Per square foot
(MEZZANINE FL.)

WATERVLIET ARSENAL

WATERVLIET, N.Y.

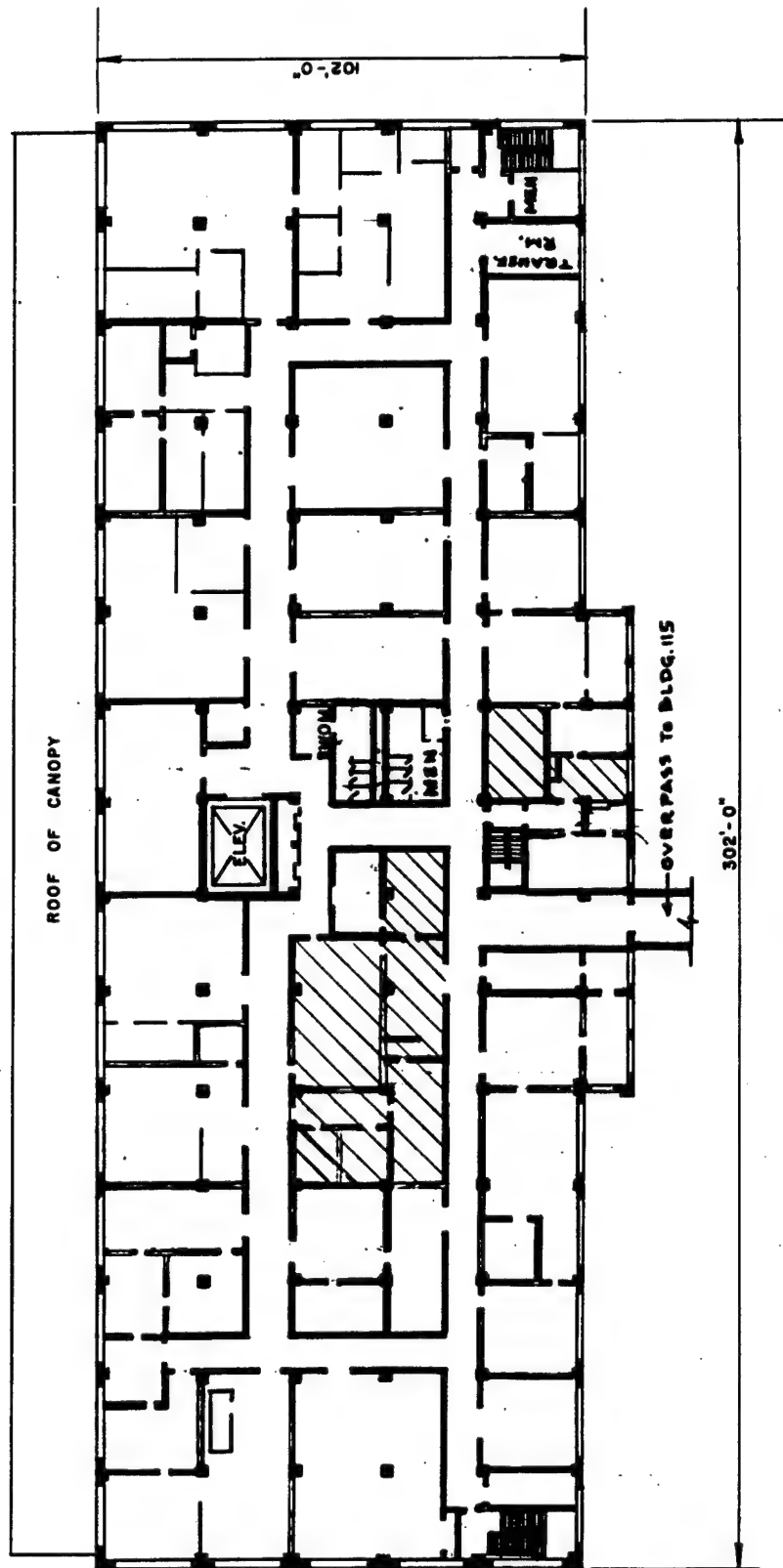
Drawn by: J.R. GANDEMI, A.E. App'd by:

**FIRST FLOOR PLAN
AND MEZZANINE
SUPPLY BUILDING
BUILDING NO. 120**

Revisions _____ Date _____

Date _____

Scale: 1"=40'-0" Date:



BENET
~~LABS~~

WATERVLIET ARSENAL

WATERVLIET, N.Y.

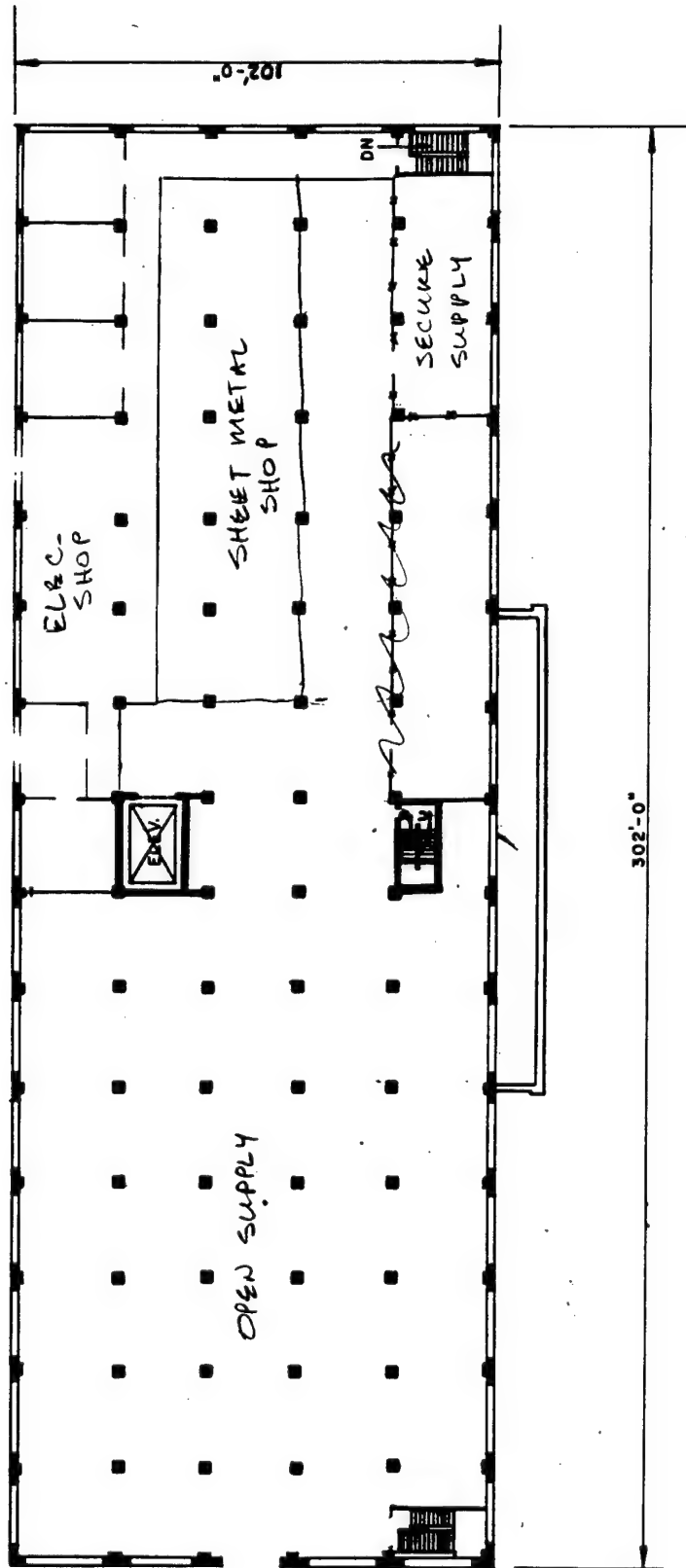
Drawn by: J.R. GANGE, A.E. App'd by: *[Signature]* Date: *[Date]*

SECOND FLOOR
R & E LAB
BUILDING NO. 120



NET FLOOR AREA
31,000
Square feet
FLOOR CAPACITY
400 LBS
Per square ft.

120-15



SUPPLY AREA

WATERVLIET ARSENAL	
WATERVLIET, N.Y.	
Drawn by: J.R. GANGEML, A.E.	App'd by: <i>J.R. Gange</i>
Revisions	Date
THIRD FLOOR PLAN SUPPLY BUILDING BUILDING NO. 120	
Scale: 1" = 40'-0"	Date:

NET FLOOR AREA
30,000
Square feet

FLOOR CAPACITY
400 LBS
Per square foot

120-16

LIGHTING SURVEY
 WATERVLIT ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
123 - CLEANING		2	F96T12/H0	21	42	255	5,355	24	32,130	
		2	F96PG17	12	24	460	5,520	24	33,120	
	TOTALS			33	66		10,875		65,250	
			SQ. FT. =	8,262						
			WATTS/SQ. FT. =	1.3						

LIGHTING SURVEY

WATERVLiet ARSENAL

DATES: 15 OCT 91 - 18 OCT 91

PROJECT # 290-0379-002

BLDG 4

LOCATN

LTS/FXTR

LAND

FXTR

• LTS

W/FXTR

WATTS

HRS/DA

KWH/YR

COMMENTS

124 -

LABS/OFFICES

2

F40T12

180

360

96

17,280

11

47,520

TOTALS

180

360

17,280

47,520

SQ. FT. = 13,800

WATTS/SQ. FT. = 1.3

LIGHTING SURVEY
WATERVLIT ARSENAL
DATES: 15 OCT 91 - 18 OCT 91
PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
125 -										
MANUF		2	F96T12/H0	92	184	255	23,460	24	140,760	
		2	F40T12	4	8	96	384	24	2,304	
	TOTALS			96	192		23,844		143,064	
			SQ. FT. =	16,000						
			WATTS/SQ. FT. =	1.5						

1. GENERAL INFORMATION

IDENTITY:

Surveyed by: P. F. Hutchins
Survey Date: 11/16/91

OPERATION Storehouse / Processing Bldg

Address Bldg 130

Type(s) of occupancy Manufact / Supply Warehouse

Name of person in charge of energy Charlie Morse / Chuck Zimmerman

PHYSICAL DATA:

Building orientation Long dimension runs NE/SW

No. of floors 1

Floor area, gross, square feet 30,904

Net air conditioned square feet None

Construction type:

Walls (masonry, curtain, frame, etc.)

N ☒ S ☒ E ☒ W ☒

Roof uninsulated - can see underside - could put 6-8" insulation on underside

Figure 15-14. Building Information

Steam lines (4) uninsulated - same with condensation lines

Roof:

Type: Flat ☒ Pitched _____ Color: Light _____ Dark _____

Glazing:

Exposure	*Type	%Glass/Exterior wall area
N	Single	25%
S	—	—
E	Single	25%
W	Single	25%

*Type: Single, double, insulating, reflective, etc.

Glass shading employed outside (check one)

Fins _____ Overhead ☒ None _____ Other _____

Glass shading employed inside (check one):

Shades _____ Blinds _____ Drapes, open mesh _____ Drapes opaque _____ None ☒ Other _____

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS.

BUILDING TYPE:

All electric _____

Gas total energy _____

Oil total energy _____

Other _____ Steam-fed unit heaters w/ TRATS

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 7 people from 0730 to 1600 (hours) *warehouse non-working*

Saturdays:

Sundays, holidays

Hours air conditioned: Weekdays from 0 to 24; Saturdays 0 to 24; Sundays, holidays from 0 to 24

* (Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day °F. dB mph wind

Summer: Day °F. dB mph wind

Night °F. dB mph wind

Night °F. dB mph wind

MAINTAINED INDOOR CONDITIONS:

Winter: Day °F. dB %rh

Summer: Day °F. dB %rh

Night °F. dB %rh

Night °F. dB %rh

Measured - 75°F

Figure 15-14. Building Information (con't)

Source of heating energy:
 Hot water _____ Steam ☒ Electric resistance _____ Other _____

Heating plant:
 Boiler No. B, 136 Rating _____ MBH

Boiler type:
 Firetube _____ Watertube _____ Elec. resist. _____ Electrode _____ Other _____
 Fuel used _____ Standby _____
 Hot water supply _____ °F, Return _____ °F
 Steam pressure _____ psi
 Pumps No. _____ Total HP _____

Room heating units:
 Type: Baseboard _____ Convectors _____ Fin tube _____
 Ceiling or wall panels _____ Unit heaters ☒ Other _____

Cooling plant: No A/C

Chillers: No. _____ Total capacity (tons) _____
 Type: Centrifugal _____ Reciprocating _____ Absorption _____

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size 80 gal Rated input _____ Water Temp. 120°F °F

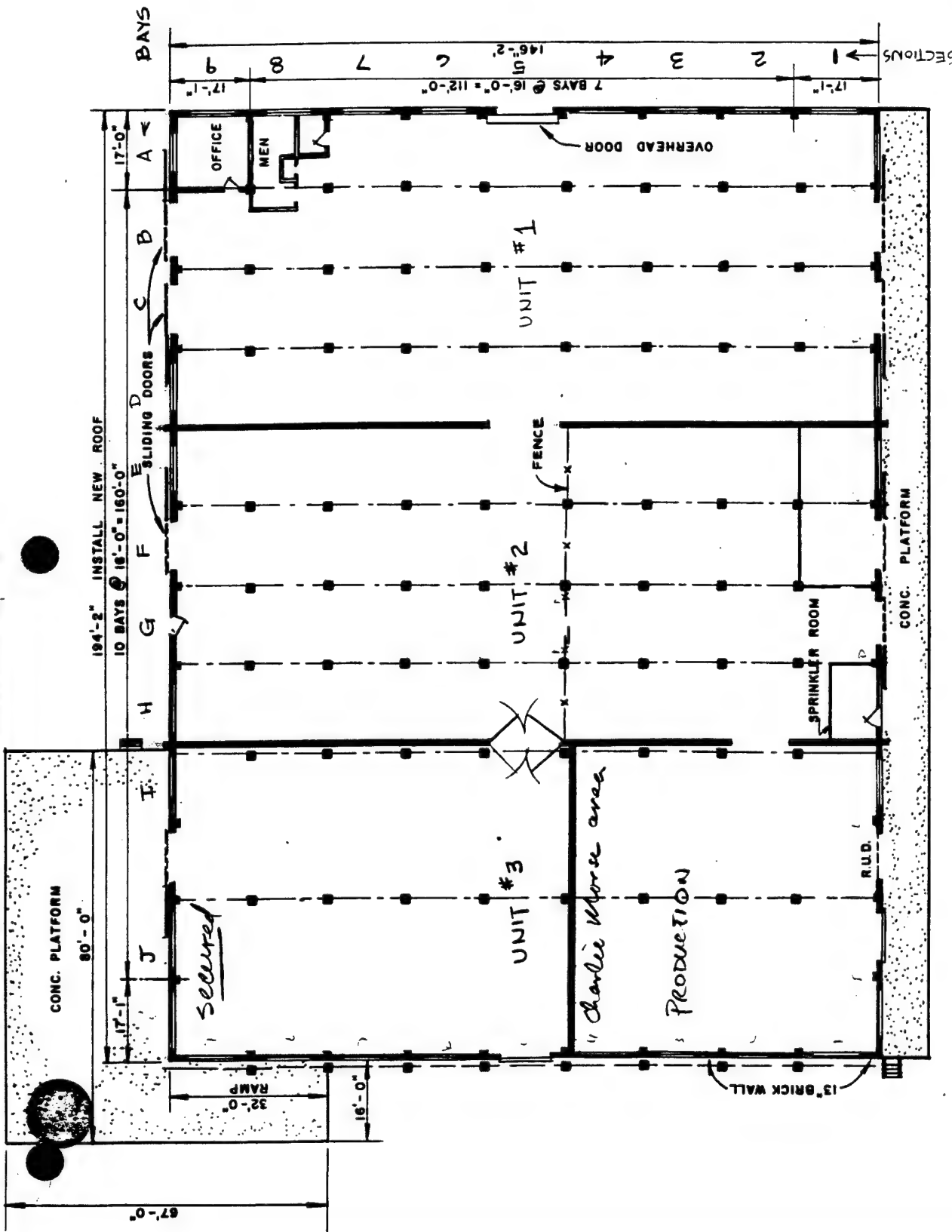
Energy Source: Gas _____, Oil _____, Electric ☒, Other _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
130 - WAREHOUSE	UNIT 2	2	F96T12	35	70	175	6,125	11	16,844	
	UNIT 3	2	F96T12	15	30	175	2,625	11	7,219	
	OFFICE	2	F96T12	4	8	175	700	11	1,925	
	COMPOSITE	2	F96T12	27	54	175	4,725	11	12,994	
				=====		=====		=====		
				81	162		14,175		38,981	
	UNIT 2	2	F90T17	9	18	215	1,935	11	5,321	
	UNIT 1	2	F40T12	36	72	96	3,456	11	9,504	
	TOTALS			126	252		19,566		53,807	

SQ. FT. = 27,625
 WATTS/SQ. FT. = 0.7



WATERVLIT ARSENAL

WATERVLIT, N.Y.
 Drawn by: J.R. GANGEMLA, E. App'd by: J.S. K... Date: ...

Revisions: ... Date: ...

MAIN FLOOR PLAN
 WEST STOREHOUSE
 BUILDING NO. 130

Scale: 1" = 30'-0" Date: ...

NET FLOOR AREA
 27,825
 Square feet
 FLOOR CAPACITY
 1000 LBS
 Per square foot

1. GENERAL INFORMATION

IDENTITY:

OPERATION Boiler Plant

Address Bldg 136

Surveyed by: P. Hutchinson
Survey Date: _____

Type(s) of occupancy _____

Name of person in charge of energy Rich Frank

PHYSICAL DATA:

Building orientation _____

No. of floors _____

Floor area, gross, square feet _____

Net air conditioned square feet _____

Construction type:

Walls (masonry, curtain, frame, etc.)

N _____ S _____ E _____ W _____

Figure 15-14. Building Information

1. GENERAL INFORMATION

IDENTITY:

OPERATION Warehouse and Property Disposal

Address Bldg 145

Surveyed by: P. Hutchins

Survey Date: _____

Type(s) of occupancy Small admin - bld / remainder is storage unheated

and dehumidified

Name of person in charge of energy Theresa Niles / Chuck Zimmerman

PHYSICAL DATA:

Building orientation Long dimension runs N/S

No. of floors 1

Floor area, gross, square feet 126,720

Net air conditioned square feet 1

Construction type:

Walls (masonry, curtain, frame, etc.) ✓

N ✓ S ✓ E ✓ W ✓

Figure 15-14. Building Information

Roof: Type: Flat ☒ Color: Light
 Pitched Dark

Glazing: Exposure *Type %Glass/Exterior wall area
 N None
 S
 E
 W

*Type: Single, double, insulating, reflective, etc.
 Glass shading employed outside (check one)
 Fins Overhead None Other
 Glass shading employed inside (check one):
 Shades Blinds Drapes, open mesh Drapes opaque None Other

SKETCH OF BUILDING SHOWING PRINCIPLE DIMENSIONS:

BUILDING TYPE:

All electric
 Gas total energy
 Oil total energy Oil-fired boiler
 Other

BUILDING OCCUPANCY AND USE:

Weekdays: Occupied by: 4 people from 0730 to 1600 (hours) supply
5 " " DRMS

Saturdays: _____

Sundays, holidays _____

Hours air conditioned: Weekdays from _____ to _____; Saturdays _____ to _____ Sundays, holidays from _____ to _____

*(Account for 24 hours a day. If unoccupied, put in zero)

2. ENVIRONMENTAL CONDITIONS

OUTDOOR CONDITIONS

Winter: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Summer: Day _____ °F. dB _____ mph wind Night _____ °F. dB _____ mph wind

Maintained Indoor Conditions:

Winter: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Summer: Day _____ °F. dB _____ %rh Night _____ °F. dB _____ %rh

Figure 15-14. Building Information (con't)

78F TSTAT op's blr - needs to be set lower

76F Envelope is heated SE unit blr constantly running
 couldn't find TSTAT
 uninsulated in enclosed area and front room

Source of heating energy: ✓ 15psi⁸ Steam ✓ Electric resistance Other

Heating plant: Weil McClain Rating 1.4 MBtu/hr MBH OUTPUT

Boiler No. BHO-40-7 12.4 gal/hr #2 oil

Boiler type: Watertube Elec. resist. Electrode Other

Fuel used #2 Fuel Oil Standby

Hot water supply °F, Return °F

Steam pressure psi

Pumps No. Total HP

Room heating units:

Type: Baseboard Convectors ✓ Fin tube

Ceiling or wall panels Unit heaters ✓ Other

Cooling plant: None

Chillers: No. Total capacity (tons)

Type: Centrifugal Reciprocating Absorption

Small admin area is heated at point of East side of building

~60'x60' Area is heated with unit heaters within the building

All else is unheated

Figure 15-14. Building Information (con't)

Condenser water used for heating _____

Demand limiters _____

Energy storage _____

Heat recovery wheels _____

Enthalpy control of supply-return-exhaust damper _____

Recuperators _____

Others _____

LIGHTING:

Interior lighting type: _____

Watts/ft²: Hallway/corridor _____

Work stations _____

Circulation areas within work space _____

On-off from breaker panel _____ Wall switches _____

Control switching _____

Exterior Lighting: Type _____ Total KW _____

DOMESTIC HOT WATER HEATING:

Size 80 gal Rated input _____ Water Temp. 120 °F

Energy Source: Gas _____, Oil _____, Electric ☒, Other _____

Figure 15-14. Building Information (con't)

LIGHTING SURVEY
 WATERVLIET ARSENAL
 DATES: 15 OCT 91 - 18 OCT 91
 PROJECT # 290-0379-002

BLDG #	LOCATN	LTS/FXTR	LAMP	# FXTR	# LTS	W/FXTR	WATTS	HRS/DA	KWH/YR	COMMENTS
145 - WAREHOUSE		2	F40T12	38	76	96	3,648	11	10,032	
		2	F90T17	6	12	215	1,290	11	3,548	
		2	F96T12	115	230	175	20,125	11	55,344	
TOTALS				159	318		25,063		68,923	
				SQ. FT. = 113,510						
				WATTS/SQ. FT. = 0.2						

R.R. SIDING

R.R. LOADING DOCK

WOMEN
MEN
OFFICE
HEATER ROOM

TRUCK LOADING DOCK

440'

16'

260'

12'

WATERVLIT ARSENAL

WATERVLIT, NY

Drawn by: J.R.GANGEMI, A.E. Appd by: *J.R.Gangemi*

Revisions

Date

FLOOR PLAN
WAREHOUSE &
PROPERTY DISPOSAL
BUILDING NO. 145

Scale: 1" = 60'-0" Date:

NET FLOOR AREA

113,510

Square feet

FLOOR CAPACITY

1000 LBS

Per square foot

145-8